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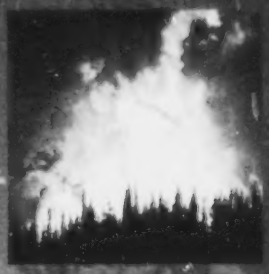

FIRESTORM 2003

PROVINCIAL REVIEW

The Honourable Gary Filmon P.C., O.M.

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February 15, 2004

The Honourable Gordon Campbell, Premier
Province of British Columbia
Room 156, Legislative Building
PO Box 9041, STN PROV GOVT
Victoria, BC V8W 9E1

Dear Premier Campbell:

Attached is the report of the Review Team, which conducted an examination of the interface fires that caused unprecedented damage and disruption throughout much of British Columbia during the summer of 2003.

During the past four-and-a-half months, the Review Team has communicated with more than 400 individuals and organizations, in person and in writing. These consultations, as well as the Terms of Reference you provided, have guided the development of our analysis and recommendations.

Thank you for the opportunity to be of service to the people of British Columbia.

Yours sincerely,

Gary Filmon

The Honourable Gary Filmon, P.C., O.M.
Chairman
Firestorm 2003 Provincial Review

Attachment

104-03189/

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Victoria BC V8X 2004

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The Review Team would also like to acknowledge the cooperation provided by the Ministry of Forests and Forest Protection Branch; the Ministry of Public Safety and Solicitor General and The Provincial Emergency Program; the Ministry of Community, Aboriginal and Women's Services and the Office of the Fire Commissioner; as well as all the organizations and individuals who took the time to provide their valuable comments in writing, e-mail or in person. Without their input this review would not have been possible.

Photographs:
Cover - Steve Grimaldi;
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Executive Summary

Introduction

The summer of 2003 was the worst ever for forest fires in British Columbia. Abnormally hot, dry weather resulted in over 2,500 wildfire starts over a vast area, mostly in the Interior of the province. Interface fires, which occur in places where wildland meets urban development, were at an all-time record high.

The interface fires of last summer destroyed over 334 homes and many businesses, and forced the evacuation of over 45,000 people. The total cost of the Firestorm is estimated at $700 million. The greatest cost of all was the loss of the lives of three pilots who died in the line of duty.

The Firestorm 2003 Provincial Review was established by the provincial government to evaluate the overall response to the emergency and make recommendations for improvement in time for the next fire season. Our findings and recommendations cross all levels of government: federal, provincial, municipal and regional, and are also aimed at individuals.

British Columbians can consider themselves fortunate that the disaster was not worse. Few communities in the province would have been immune from an interface fire, given the extreme danger ratings over the course of the summer. Without action, the danger remains.

Review Process

During the public consultation phase, the Review Team received an amazing response that included over 400 presentations, submissions and communications. The public and stakeholder response covered the entire range of issues: forest management, emergency preparedness and planning, firefighting, operation of emergency centers, evacuations, resettlement, and post-emergency recovery.

Participants displayed a practical, commonsense approach to addressing the problems. This demonstrated that many people were thinking through the issues and the need to be better prepared for interface wildfires.

Prevention and Preparedness

Forest Management, Fuel buildup and Fireproofing
There have been interface fires in British Columbia in the past, followed by reports on various aspects of the specific fire and the ongoing threat to interface communities. The Firestorm 2003 Review Team reached many of the same conclusions as previous studies, but with added urgency due to the experience of last summer.

It is clear that a successful record of fire suppression has led to a fuel buildup in the forests of British Columbia. The fuel buildup means that there will be more significant and severe wildfires, and there will be more interface fires, unless action is taken.

Many people who came forward during the consultation process also recognized the severity of the fuel buildup problem in the interface zone. We were impressed with the commitment of citizens to addressing the problem, and their willingness to entertain new approaches and solutions to safeguard their communities.

Key recommendations for reducing fuel build up in British Columbia forests include:

- fuel-treatment pilot projects in locations of high interface fire risk;
- on-site removal or burning of spacing slash to mitigate the surface fuel hazard;
- assessment of fire-prone ecosystems within or adjacent to a wildland urban interface for risk reduction; and,
- training more professionals who can implement a forest fuel reduction program while meeting complex ecological, social, and economic constraints.

In addition, the province should investigate alternatives to stumpage as an incentive for the forest industry to harvest high-risk, low-value fuel types. The Ministry of Forests should consider amending Annual Allowable Cut determinations to encourage hazard reduction treatments by tenure holders in marginal and uneconomic tree stand areas within the wildland/urban interface.

Governments and individuals share responsibility for fireproofing communities and developments that may be affected by interface wildfires. Homeowners have an obligation to undertake activities that help fireproof their own residences and businesses. In the aftermath of Firestorm 2003, the government has an opportunity to:

- establish a provincial strategy for fireproofing interface communities;
- mandate long-term community fireproofing programs which will build upon local zoning and building codes; and,
- begin pilot projects that will enhance safety and that can also produce economic benefits.

Emergency Management

The obligation of government is to put in place an emergency management system and emergency plans that safeguard human life and property, and it should be the best system possible.

The province has an established and credible emergency preparedness and response system based on the Incident Command System (ICS) model, and has implemented the British Columbia Emergency Response Management System (BCERMS). However, there are gaps in coverage. The entire province is not protected by well-thought-out and up-to-date emergency plans at the local level.

While municipal governments are required to have emergency plans, regional governments are not. This leaves significant parts of some districts exposed, not only to interface fires, but also to other emergencies and crises. The government of British Columbia must ensure that there are emergency plans developed for the entire area of the province.

There is clearly a need for consistent training across the province in all aspects of emergency planning. It has been said that practice makes perfect. Simulations and exercises are required on an ongoing basis to ensure that people remain current in their skills. This investment will pay dividends in the future.

The province can do its part by ensuring:

- the consistent use of BCERMS by all agencies;
- that emergency plans are mandatory for all local governments including municipal and regional districts; and,
- that public servants at all levels have appropriate training and have opportunities to exercise and practice their skills.

These actions will re-assure citizens that British Columbia has the best possible systems and people in place to help protect lives and property.

Responding to the Emergency

In responding to the Firestorm of 2003, emergency and firefighting resources were taxed to the limit. British Columbia was, for much of the time, dependent on resources from outside the province.

It became evident from some consultation submissions and the Review Team's subsequent research that while there is a provincial emergency plan in place, and plans at the municipal level, their coverage is incomplete and their execution could be improved.

Command and Control, Communications, Public Education

Operations at the very beginning of the fire season were marked with difficulties in getting organized dealing with the media, and in communicating with the public. This improved later in the fire season.

It is vital that emergency crews be able to communicate effectively. It is important that residents receive accurate, up-to-date information about the wildfire situation. To address these issues:

- British Columbia Emergency Response Management System (BCERMS) and the Incident Command System (ICS) should be universally adopted and used in a consistent way by all provincial and local government agencies. Training course material, delivery and examination for the ICS should be standardized across organizations.
- A provincial strategy for emergency communications technology is required to achieve total radio interoperability between all agencies. It should include a provincial inventory for all fire, police, ambulance, and forestry radio frequencies.
- There should be a provincial strategy for public information and media communications during major emergency events. The strategy should include the participation of all key stakeholders, especially the news media.
- A cooperative public education program is needed to inform residents about the risks of living in the wildland/urban interface and their personal responsibilities in preparing for and responding to interface fires. This should include the preventative and protective measures they can adopt to make their lives safer.

Firefighting Resources

Some interface areas are without a responding emergency fire department. Some fire departments do not have authorization to attack out-of-boundary interface fires. Some fire departments do not have effective mutual aid/automatic aid agreements with neighbouring communities. It is unacceptable that emergency agencies are prevented from working together. Other jurisdictions have found effective means by which this can occur and so should British Columbia.

Firestorm 2003 highlighted the need to quickly and accurately locate firefighting resources and equipment from across the province. There is no system in place in British Columbia to allow this to be done in an effective and efficient manner. To address this issue:

- The Office of the Fire Commissioner should implement a searchable database to maintain a current and accurate province-wide inventory of private and public sector equipment available for fire response.
- The Ministry of Forests, Forest Protection Branch should implement a modern records management system to maintain a current and accurate province-wide inventory of certified forest firefighters available at the local level.
- The Ministry of Forests, Forest Protection Branch should consider some mechanism that allows past experience in the forest industry or firefighting to be recognized as equivalent certification, as a means of ensuring adequate local resources are available in times of extreme need.

The Ministry of Forests should explore ways to enhance the participation of First Nations in forest firefighting and forest fuel load reduction programs.

The Ministry of Forests, Forest Protection Branch and the Office of the Fire Commissioner should ensure that pay rates and payment criteria for volunteer and professional firefighting personnel are pre-established, consistent and understood by all parties.

Currently, volunteer firefighters are expected to pay for the training courses they take to upgrade their skills and knowledge as firefighters. Training for volunteer firefighters should be funded by municipal and regional governments.

Aside from firefighters who are members of an established volunteer force, no greater use of untrained volunteers should be encouraged in wildfire settings. There is a very real risk that sending untrained and inexperienced volunteers into the midst of a major forest fire would be to place them in harm's way.

Evacuations

Never before had such a large-scale evacuation been undertaken in British Columbia. That it was achieved without serious injury or loss of life is a tribute to those who worked tirelessly to help evacuate people as the wildfires encroached on homes and businesses.

However, as with most things being done for the first time, there are lessons to be learned and improvements to be made.

It is important to gain public support and partnership for the emergency management process. Authorities must ensure that evacuation processes are well understood and the reasons clear. Authorities must achieve public trust if evacuation orders are to be followed with confidence. Comments heard during the review indicate that was not always the case.

It is recommended that British Columbia allow more local decision making on evacuations. The requirements for ordering and lifting evacuation orders should be reviewed by the provincial government to ensure that decisions can be made by those people with the best information, closest to the action, who are competent to do so. Decisions should not always depend on the Office of the Fire Commissioner in Victoria.

Homeowners should accept their obligations, preparing to evacuate if required during an interface fire emergency. This includes knowing where the evacuation routes are.

Rather than trying to fight the wildfires, a more appropriate role for volunteers in emergency situations would be to help deliver a whole range of social and community-based services, especially for people evacuated from their homes. These vital programs are coordinated out of the Emergency Social Services Centre set up in each affected community.

As much as possible, volunteers should be kept fully informed of policies, event status and expectations in recognition of their value as team members. Volunteers should be treated with the same respect as all members of emergency management staff.

Post-Emergency Recovery

In visiting the affected communities, the Review Team observed and received positive indications of the work being done to restore the physical damage caused by Firestorm 2003.

There is an immediate need to address watershed erosion and flooding concerns. Impacted areas should be restored to prevent subsequent problems of floods, landslides and other topographical hazards resulting from the destruction of vegetation by the wildfires.

Over the years, the Government of Canada has accepted and fulfilled its responsibility to provide financial assistance to the provinces and citizens at times of natural disaster. It is a principle of Canadian federalism that should continue.

However, there are clearly problems and impediments with the smooth functioning of federal disaster relief, particularly in the need to provide more clarity in the way in which the rules are applied to ensure consistency across the country. Governments should be prepared to look at investing in mitigation efforts to reduce long-term disaster assistance expenditures in the future.

In summation, this report provides for a plan of action. Its implementation, effectiveness and success depend on the willingness, ability and commitment of those tasked with moving it forward. I am confident they will meet the challenge.

Introduction

Wildfires threaten British Columbia communities

The summer of 2003 was unprecedented for British Columbia. Weather conditions throughout the province were hotter and drier than normal for the third year in a row. The risk of forest fire became extreme. In the Interior, a combination of lightning strikes and human actions resulted in over 2,500 wildfire starts. Some fires went on burning for days and weeks, growing in size and creating massive challenges for emergency crews and residents. The situation received extensive news coverage nationally and internationally.

While there have been extensive forest fires in British Columbia before, it was the first time we saw such a significant number of fires encroach onto communities located in the forest interface. Technically, in firefighting, an "interface" fire is one that involves human development and wild land simultaneously. The interface fires last summer caused the destruction of 334 homes and many businesses in the Interior. More than 45,000 people were evacuated from their communities.

Over 260,000 hectares of forest were destroyed province wide.

The total cost of the firestorm that hit the Interior of British Columbia is estimated at $700 million. This includes property losses and the cost of fighting the fires. The greatest cost of all was the loss of three lives, pilots who died in the line of duty.

Due to the scale of the destruction and its aftermath, and in response to public concerns and questions, the Government of British Columbia commissioned an independent review of the 2003 summer interface fires.

Was British Columbia prepared for the firestorm? How well did British Columbia's emergency systems and crews deal with the situation? What could be done better if it happens again in the future? What action should be taken?

The Firestorm 2003 Provincial Review Team was asked to find answers to these and many other difficult questions. The government began the process in September 2003 by providing the Review Team with Terms of Reference covering a broad range of issues, from wildfire planning and preparedness, to response and recovery.

To ensure impartiality, the government wanted the review to be conducted by someone from outside the province who would approach the task without bias or preconceived ideas. The team leader should have experience working with a wide range of public and private organizations, and specifically in dealing with large-scale civil disasters.

In October 2003, I was appointed to chair the Review Team. My experience includes 25 years of elected public office, with two terms on Winnipeg's City Council and

21 years in the Manitoba Legislature. I spent eleven-and-a-half years as Premier, during which time we experienced the worst forest fires in the province's history and the flood of the century on the Red River. Having experienced crises like these brings important assets to the wildfire review process here in British Columbia.

I was asked to report to government by mid-February 2004. Meeting this very tight timeline required us to follow a demanding schedule. It also implied that, while the Review Team should be thorough in examining all issues, we must focus on the most important decisions and not become overly immersed in detail.

The most compelling reason expressed by the British Columbia government for the tight timeline was to give the province and communities the ability to implement as many of the review's recommendations as possible before the next forest fire season. This was important because all forecasts suggest we are still early in a dry weather cycle. As well, given the time constraints of provincial government budget, legislative and policy processes, a short reporting deadline was essential.

The Review Team accepted the challenge. Through a public consultation process that took us to key communities in the fire zones, my colleagues and I listened to virtually all British Columbians who wanted to share their direct experience with the devastating interface fires of 2003. We did this in order to learn from their first-hand knowledge.

We visited the areas most affected by the wildfires and held nine days of public meetings in Barriere, Kamloops, Chase, Kelowna, Penticton, Osoyoos, Cranbrook and Nelson. (Appendix A lists the public meetings.) We selected these eight communities to ensure broad coverage of the affected area and provide the best opportunity for residents and stakeholders affected by the wildfires to attend the public meetings if they chose to do so.

The public consultation phase was followed by approximately nine more days of stakeholder meetings with organizations and individuals who played a role in the process. (All participants are listed in Appendix B.) The Review Team also received many written submissions and e-mails from individuals and organizations that were not able or chose not to make presentations at the public meetings.

Throughout the process we emphasized that our main goal in consulting with people was to listen and learn. We made it clear that the Review Team would not assign blame or identify scapegoats unless negligence was found. Rather, our job was to identify what worked well during Firestorm 2003, and focus on areas that might be improved for future forest fire seasons.

Throughout the consultation, we were impressed by the high degree of common sense and practicality that characterized the presentations made by individuals and organizations. Not only were people offering sensible advice, they were doing it in a cooperative atmosphere which showed they understood the practical, financial and organizational limits that governments face in dealing with natural disasters.

At the same time, it was clear to the Review Team that many British Columbians who do not live in fire zones have not yet recognized the scope, magnitude and extent of the wildfires which devastated the Interior of the province in 2003. Many British Columbia communities are not adequately prepared to deal with the types of wildfires experienced by their neighbours last summer.

As well as consulting with members of the public, the Review Team also wanted to understand as thoroughly as possible the policies, standards and processes employed by the various agencies and departments, from all levels of government, who participated in the team effort to deal with Firestorm 2003. We needed to hear first-hand from firefighters, emergency crews and their supervisors. To do this, we held daylong briefings with staff from the Ministry of Forests, Forest Protection Branch, with the Ministry of Public Safety and Solicitor General, responsible for the Provincial Emergency Program, and with the Office of the Fire Commissioner.

In performing this review we have exercised our best judgment. We consulted with expert opinion, where required, before arriving at conclusions, and we attempted to test for anticipated consequences before making recommendations.

I am confident the recommendations contained in this report, when fully implemented, will not only minimize the economic, social, ecological, and public safety consequences of interface fires in British Columbia, but will also serve to impress upon everyone the importance of wildfire prevention and mitigation.

The Honourable Gary Filmon, P.C., O.M.
Chairman
Firestorm 2003 Provincial Review

Terms of Reference

The British Columbia government provided the Review Team with these Terms of Reference for their mission.

The provincial review will focus on prevention, planning and response including the following:

- Roles and responsibilities of all levels of government to plan for and respond to interface fires - to determine if the roles and responsibilities are clearly set out and understood by all levels of government.

- Risk assessment processes for determining the potential for interface fires - to assess the methods used in determining what the risks might be from interface fires and how local governments and the province determine the response to fires threatening communities.

- Mitigation strategies used for reducing the potential for interface fires, including the development of prevention strategies and hazard, risk and vulnerability assessments.

- Planning capabilities at the local, provincial and federal level to mitigate the impacts of interface fires (i.e. evacuation planning) - to assess the level of planning and the ability of communities to activate those plans.

- Command structure for responding to provincial emergencies and disasters – to assess the method of response used by the province in support of local government and the response by local government, including deployment of equipment and personnel; and to assess wild land/urban strategies and tactics for responding to interface fires.

- Provincial structure required to deal with communications and public information during emergencies and disasters - to determine the timeliness and effectiveness of communications.

- Training and exercising programs for emergency response to all-hazard emergencies and disasters at the community and provincial level.

- Role of volunteers in responding to fires - to assess how mechanisms for involving volunteers can be supported and enhanced.

- Compensation and assistance for the province - to assess the framework for assistance from the federal government for abnormal expenditures by the province.

The Challenge

When disaster strikes

In times of natural disasters, people in any part of the world are faced with unprecedented challenges and unforeseen consequences. Such events are often termed "acts of God" or "catastrophic occurrences" and are understood to be beyond normal human experience. In the worst cases, we are faced not just with one disaster, but with a series of emergencies and an ongoing succession of unexpected destructive events, often over a considerable period of time.

Given the unpredictability of the forces of nature, it is fair to say that no amount of planning, or any degree of preparation could ever put us in a position to adequately and successfully prevent and control the large-scale and catastrophic natural disasters that occur in our world. From hurricanes and tornadoes to earthquakes, floods and fires, we can never expect to be so well prepared that we can mitigate all damage and save all human life. Such is the case when we are dealing with a disaster of the magnitude that engulfed the British Columbia Interior in the summer of 2003.

However, people have a right to expect a high level of preparedness and competence in our public and private sectors, given that the province's heavily forested geography is often at risk from wildfires.

When disaster strikes close to home, British Columbians depend on a government-led response that will:

- successfully attack and mitigate the damages of forest fires;
- plan and deliver a wide range of emergency services to protect life and property; and,
- provide support and compensation to those affected.

Although these are difficult challenges, we must have the expertise, experience and emergency systems ready to meet them.

We must also recognize that even the best systems rely on human beings to make judgments and carry out many functions under enormous stress in a rapidly changing, high-risk environment. To review the system's performance under these stressful conditions, our measure of evaluation must be to judge whether the actions taken were reasonable in the circumstances and were undertaken without negligence.

In the course of fighting some 2,500 fires, and dealing with the ensuing evacuations of communities, households and businesses, there were literally thousands of decisions and judgment calls made by hundreds of individuals on the ground. Without having been on the fire line, or in the command centres, it is difficult to second-guess the decisions made by emergency

personnel, although with the benefit of hindsight it may be tempting for some to do so.

The protection of human lives must remain the most important standard for evaluating the effectiveness of the firefighting and emergency response efforts. This includes the lives of those who put themselves in harms way to do their job. The hearts of all Canadians go out to the families and loved ones of the three pilots who died while heroically fighting the British Columbia wildfires in the summer of 2003.

The fact that more lives were not lost in the battle is a testament to the approach followed by the various departments and agencies involved. Although some presenters to the Review Team suggested that the approach was too cautious, and called for more aggressive intervention by fire crews, it is difficult to argue that greater risks to human life could or should be tolerated.

Many people urged the Review Team to respond to issues that were beyond our Terms of Reference. Where possible, we did respond, and tried to be as flexible as possible so as not to artificially limit the scope of our inquiry. However, the practical limitations of time dictated that we avoid attempting to address every conceivable question or issue regarding the fires.

Where it was reasonable and practical to do so, we endeavoured to find answers to those questions posed at our public hearings, which we were not able to address at the time. These questions were forwarded to the various responsible departments and agencies of government for follow-up. Their answers have been summarized in Appendix C of this report.

Concurrent with our review, other provincial agencies and organizations have conducted post-fire season operational reviews to determine how well they performed in the field during Firestorm 2003. The Review Team did not duplicate that work.

Instead, the Review Team had an opportunity to review drafts of those operational reviews and we commend the public servants for their diligence, honesty and commitment to improvement. Their reviews have produced significant recommendations for

self-improvement and enhancement of the systems and processes in place to protect people and property from fires in British Columbia.

Where appropriate, in our own report, we have endeavoured to reinforce the many recommendations we support. However, in some instances, our recommendations present a point of view that differs from current practice or policy.

To summarize, although we generously interpreted the Terms of Reference from time to time, in order to address the concerns of the people affected by the wildfires, we accepted the Terms as a reasonable boundary for the review. Similarly, we resisted the temptation to drill down into too much detail, even though the Terms of Reference may invite this in some cases.

The Review Team believed that it was more important to identify major areas of strategic policy and process, which can and should be addressed and improved, leaving tactical management decisions to the line managers and their own post-fire season operational reviews, which have been conducted.

The Firestorm 2003 Provincial Review focuses on the big picture and what British Columbia should do to prepare for the next wildfire challenge.

As can be expected in a consultation process of this nature, there were a number of recurring themes and conclusions, and many excellent observations and recommendations for change that merited the Review Team's attention. However, no discussion of last summer's firestorm or the issues it raised would be complete without an understanding of the environmental and meteorological context in which the events occurred.

Context

Driest three-year period on record

As the meteorological maps from Environment Canada show (figures C1 and C2), most areas of British Columbia were significantly drier and hotter than normal in 2003. Precipitation in the central region of the province during the summer months was 30 per cent lower than normal, and almost 60 per cent lower in the southernmost zone near the US border.[1]

The situation is best summed up in the following commentary by Environment Canada:

"The conditions for BC's summer of fire were four years in the making. Going into 2003, some areas along the Pacific Coast and in the southern interior were in the midst of their worst drought in 100 years. From 2000 to 2002 inclusive, only two of twelve seasons were wetter than normal in southern British Columbia and only one was colder than normal. Prior to this summer, southern BC had gone through its driest three-year period on record. Evidence of prolonged dryness was everywhere. Near-record low stream flow (10 to 20% of normal in some areas) and deficient ground water raised the concerns of power companies, water utilities and homeowners on wells. The Fraser River peaked near the first of July at

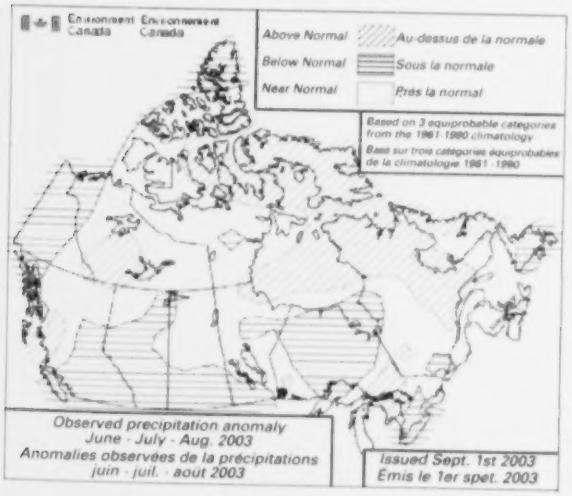
Environment Canada
Environnement Canada
Above Normal
Au-dessus de la normale
Below Normal
Sous la normale
Near Normal
Près la normal
Based on 3 equiprobable categories from the 1961-1990 climatology
Basé sur trois catégories équiprobables de la climatologie 1961-1990
Observed precipitation anomaly
June - July - Aug. 2003
Anomalies observées de la précipitations
juin - juil. - août 2003
Issued Sept. 1st 2003
Émis le 1er spet. 2003

Figure C1

Environment Canada
Environnement Canada
Above Normal
Au-dessus de la normale
Below Normal
Sous la normale
Near Normal
Près la normal
Based on 3 equiprobable categories from the 1961-1990 climatology
Basé sur trois catégories équiprobables de la climatologie 1961-1990
Observed temperature anomaly
June - July - Aug. 2003
Anomalies observées de la température
juin - juil. - août 2003
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Figure C2

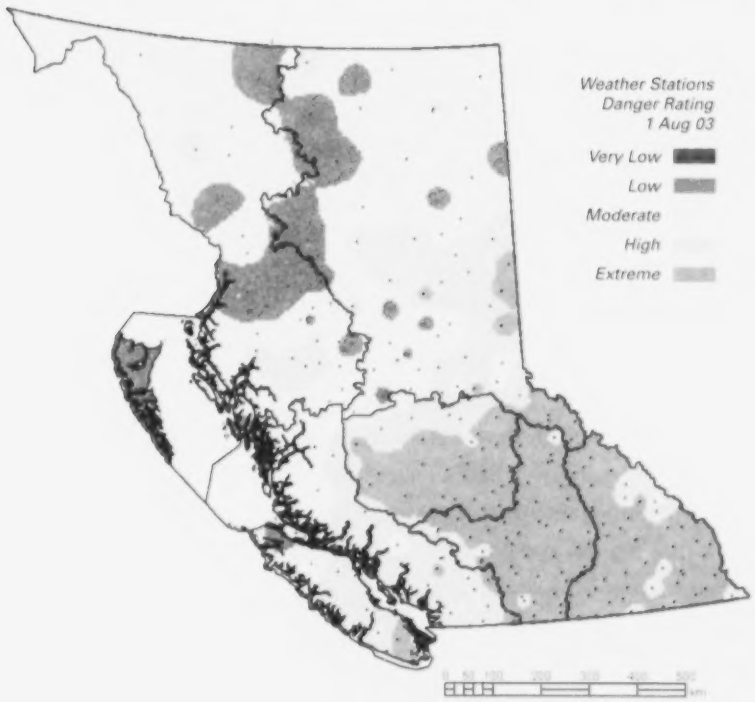
[1] Environment Canada website, http://www.msc-smc.ec.gc.ca/ccrm/bulletin/summer03/figmapp_e.html?season=Summer&date=2003

one of the lowest stages since record keeping began 90 years ago. Hungry bears roamed the suburbs; hoards of beetles munched on pine trees; salmon suffocated in lethally warm streams; worried utilities imported energy; and water-desperate ranchers culled herds.

Just when you thought it couldn't get worse, it did! During most of the summer, a large Pacific high-pressure area anchored near the coast kept weather away from British Columbia. At some weather stations in the Interior, temperatures soared to 40C. In Kamloops, temperatures rose above 30C on 19 days in July and 20 days in August; normal for each month is 11 [days]. Kelowna recorded the driest June-July-August period since records began in 1899 and set a record with 44 consecutive rainless days. On the coast, Victoria had its driest summer since record keeping began in 1914 with a paltry 8.2 mm of rain. The forests in the south were tinder-dry and the forest floor volatile – a spark away from igniting. Then came flashes of dry lightning, strong gusty winds and a bit of human carelessness."

In summary, due to abnormal weather conditions the Interior forests were unusually dry and hot, and the risk of wildfires was extreme. But no one could imagine the scale of the firestorm to come.

Danger Rating August 1, 2003



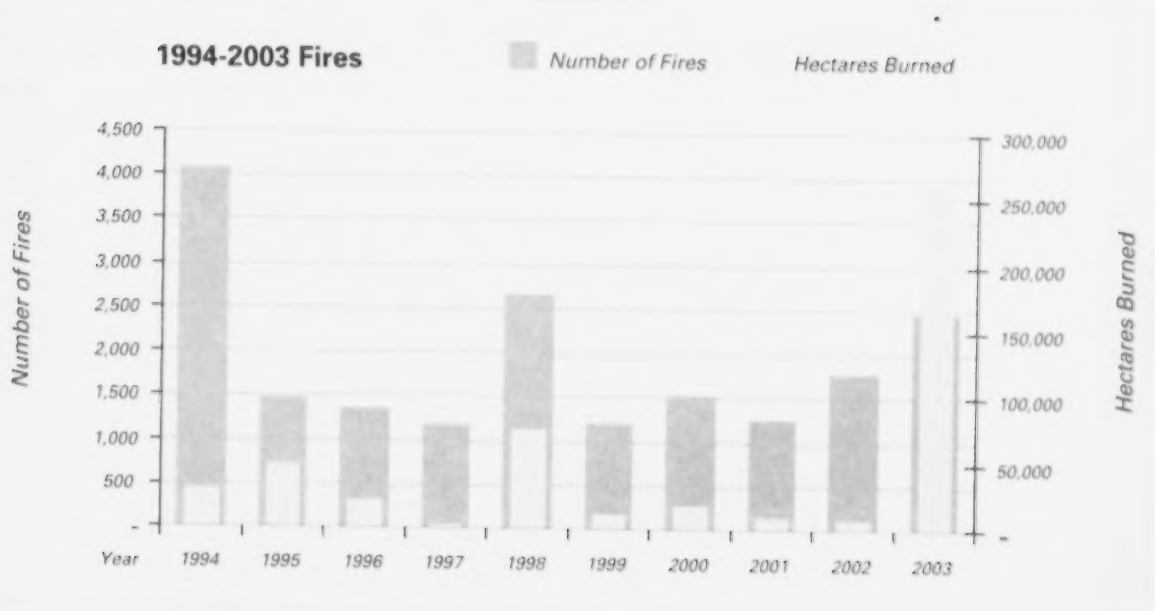
By midsummer the continuing drought combined with the fuel conditions created an extreme fire hazard danger rating over a significant proportion of the province. The high and extreme danger rating covered most of Vancouver Island including the capital region, the Gulf Islands, and all of the southern mainland including all the major population centres from Vancouver through the Okanagan to the Kootenays. On the peak day, most of the southern half of the province was in extreme or high fire danger. At this point, no community could be assured they would not be the site of the next interface fire.

Perspective

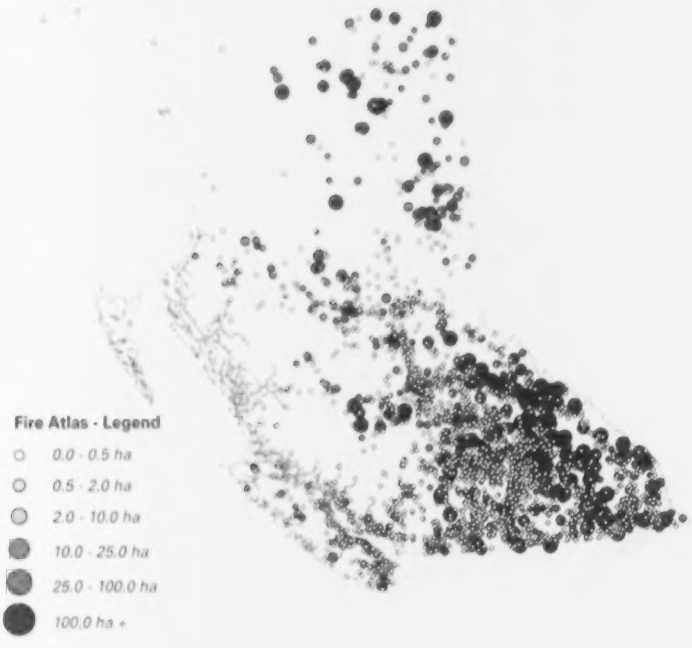
Worst wildfires in British Columbia history

In the aftermath of Firestorm 2003, many adjectives were used to describe the fires and their effects. By various measures they were the biggest, the most intense, the most expensive, and the most devastating wildfires in British Columbia's recorded history. A comparison with past fire seasons serves to put Firestorm 2003 into perspective.

It is important to note that over 89 per cent of all 2003 wildfires were contained to less than four hectares in size by emergency crews. Wildfires of 1000 hectares or larger made up less than two per cent of all 2003 wildfire starts. However, 15 of these were major interface fires affecting communities, households and businesses.



The graph above shows the history of forest fires in British Columbia over the past decade.



This map shows the geographical extent of Firestorm 2003.

Walls of flame moved through the forests at a speed of over 10 metres per minute to threaten Interior cities, communities, homes and businesses. It was the worst wildfire disaster in memory, but why did "the Big One" happen in 2003? The main contributing factors, observers agree, were the hot, dry weather and the resulting high-risk conditions in British Columbia's forests.

People can do very little about these forces of nature. Rather than dwell on causes beyond anyone's control, the Review Team focused on how the province, its communities and emergency response systems dealt with the disaster.

Major Interface Fires of Summer 2003

Start Date	*Fire Name*	*Location*	*Final Size*
July 22, 2003	*Chilko Fire*	*Chilko Lk. Alexis Cr.*	*29,202*
July 31, 2003	*McLure Fire*	*McLure, Barriere*	*26,420*
August 16, 2003	*Okanagan Mt. Park Fire*	*Kelowna*	*25,600*
August 1, 2003	*McGillivray Fire*	*Chase*	*11,400*
August 16, 2003	*Lamb Creek Fire*	*Cranbrook*	*10,979*
August 16, 2003	*Venables Fire*	*Chase*	*7,635*
August 17, 2003	*Ingersol Fire*	*SW of Nakusp*	*6,700*
August 1, 2003	*Strawberry Hill Fire*	*Kamloops IR*	*5,731*
August 20, 2003	*Kuskanook Fire*	*North of Creston*	*4,832*
August 22, 2003	*Vaseaux Fire*	*OK Falls*	*3,300*
August 14, 2003	*Plumbob Fire*	*Cranbrook*	*2,870*
August 2, 2003	*Cedar Hills Fire*	*Falkland*	*1,620*
August 6, 2003	*Bonaparte Lake Fire*	*Bonaparte Lake*	*1,500*
July 17, 2003	*Anarchist Mt. Fire*	*Osoyoos*	*1,230*
August 20, 2003	*Harrogate Fire*	*Radium*	*1,018*

The chart above lists the major interface fires of summer 2003.

Building on Past Experience

In the course of preparing this report, the Review Team had the opportunity to review a great many excellent reports and studies produced by experts in British Columbia and also in the United States, Australia and other parts of Canada and the world. We are struck by the fact that so much is already known about the risks and the challenges of living in an interface area and dealing with the inevitable fires such as those that occur every year in British Columbia's forests.

To put this in perspective, over the past decade, British Columbia has averaged approximately 2,000 forest fires annually, although normally, there has only been one serious interface fire per year.

Because there has been significant damage and loss due to interface fires in the past decade, there have been several major reports produced on the subject.

In March 1995, Price Waterhouse produced a review of the Garnet Fire of 1994 near Penticton, which burned 5,500 hectares, caused the evacuation of 3,000 people, destroyed 18 homes and cost over five million dollars. The independent consultants identified specific areas for improvement and also made more broadly-based recommendations, including:

- the importance of public education on interface wildfire risks and preventative measures;
- ensuring fire regulations, building codes and subdivision standards are used to reduce the risk of wildfire in interface areas;
- clearly defining roles and responsibilities; and,
- requiring regional districts to prepare emergency plans.

Similarly, the Ombudsman of British Columbia released a review following the Silver Creek Fire of 1998 near Salmon Arm that damaged over 6,000 hectares, caused the evacuation of 7,000 people, destroyed 40 buildings and homes and cost $15 million to fight. Improved communications and training, and increased personal responsibility by people living in the interface, were central themes in the Ombudsman's recommendations.

In 2001, the Auditor General of British Columbia produced a report titled *"Managing Interface Fire Risks."* The recommendations from this report focused on the need for better planning and preparation.

In 2002, the Ministry of Forests commissioned PricewaterhouseCoopers (PWC) to undertake a comprehensive review and benchmarking survey to compare British Columbia's Fire Protection Program with other jurisdictions and to recommend improvements with regard to performance measures and organization.

One recommendation from the PWC report in particular is worth noting. That recommendation stated:

"Overall, the British Columbia Forest Protection Program performs well relative to the other jurisdictions included in the survey. Although the Program's costs are not always lower than other jurisdictions, British Columbia has a consistently low average fire size, low total area burned and a strong safety record. This suggests that British Columbia's personnel are well-trained and effective."

Nothing in our review of Firestorm 2003 dissuades the Review Team from reaching this same general conclusion. Our exposure to and contact with officers within the Forest Protection Service confirms the finding of the PWC report that, *"a strong sense of pride and esprit des corps has been developed within the rank and file of the Program."*

The PWC report also noted that: *"The Program has a well-established training and development section that is recognized nationally and internationally."*

Nevertheless, incremental and continual improvement is a trait inherent in all successful organizations. To that end, our recommendations respecting the Forest Protection Service are intended to comment on those areas where improvements are desirable, and will contribute to an even better performance.

It is clear that planning for, responding to and recovering from wildfires are significant issues in many jurisdictions. With each wildfire incident, our experience increases and these reports serve to document the knowledge gained so that we can be better prepared for the next incident.

Several of the recommendations made in the previously mentioned reports are common to more than one report. This is not new ground. However, wildfires are unpredictable and, as a result, fire management is a complex issue.

As these previous reports have also demonstrated, there is no one right answer.

As was stated in the Alberta Fire Review '98 Final Report, *"Wildfire will always occur on the forested landscape and will always have an impact on people, property and resources. The goal of the program is to minimize the impacts, not to eliminate the impacts."*

Conclusion

The Review Team has been struck by the level of concern expressed throughout the course of our review, not only by those people who experienced interface fires directly this past year, but by many who felt they were spared the experience only by good fortune. The Review Team met with a number of representatives from other interface areas missed by Firestorm 2003, who wanted to develop and implement plans to fireproof their communities for the future.

We believe that the attention of an increasing number of British Columbians is focused on this issue with an awareness and sense of urgency that did not exist in the past. We believe that many stakeholders are now more open to accepting recommendations for change with regard to forest management practices, planning, zoning and building restrictions and other issues that may have been controversial in the past.

In the aftermath of Firestorm 2003, we believe that more and more British Columbians are willing to accept renewed leadership and governance in implementing better solutions to the challenges they face from wildfires.

The Issues ~ Common Themes Emerge Across the Interior

Based on the public consultations, stakeholder meetings and submissions received by the Review Team, a number of common themes emerged around Firestorm 2003. We have chosen to use these themes as the basis for much of our report.

Given our mandate, the Review Team was tasked with addressing those issues and concerns that had broad-based impact and relevance to the entire wildfire interface area. Accordingly, and consistent with the public input, we looked at and focused our efforts on the following key themes:

- **Forest Management**
- **Emergency Management**
- **Command and Control**
- **Communications**
- **Evacuations**
- **Resources**
- **Financial Accountability**
- **Post Emergency Recovery**

Preparing for Interface Fires ~ Forest Management

Overview

The wildfire zone is not only getting closer to people, but people are getting closer to the wildfire zone. The major interface fires which occurred throughout the British Columbia Interior highlighted the fact that community development, home building and other human activity continues to push into those ecosystems most susceptible to frequent and severe fires. This places an increasing importance on the province's forest management decisions.

While wildfires occur naturally as part of the normal growth cycle of a forest, they are also influenced by what people do. Forest management was an issue raised in all public meetings and by many of the stakeholders and experts who met with the Review Team.

Specifically, knowledgeable observers pointed to the buildup of fuel in British Columbia's forests as one of the reasons for the severity of Firestorm 2003 and why they considered the risk of future fires to be increasing.

By fuel, professional foresters mean combustible material needed for a wildfire to burn, such as trees, brush and other vegetation. The Auditor General of British Columbia, in his 2001/2002 report on Managing Interface Fires, noted that past successes in fire suppression have led to a buildup of vegetation and forest density. This puts the forests at extreme risk of wildfires during hot, dry and windy weather, all of which occurred this past summer.

This past fire season also heightened our awareness about the detrimental impacts of long-term fire

exclusion (human intervention to extinguish periodic naturally occurring fires). This results in changes in tree stand structure, a decline in forest health, productivity loss, and increased fire severity, as well as negative impacts on air and water quality. These issues have been long debated in the forest management professions and in British Columbia's forest communities.

The Ministry of Water, Land and Air Protection's Fire Management Team, formed after this summer's wildfires, stated that the Okanagan Mountain Provincial Park area had missed three disturbance intervals due to fire suppression. "Disturbance intervals" are times when a wildfire would be expected to burn the area in a normal natural cycle. When this is prevented by fire-fighting activities, the fuel builds up over time, and eventually the forest erupts into a really big fire. The Fire Management Team warned that much of the province's interior remains in a fuelled-up condition and the risk of future wildfires is high. The Ministry of Forests, Forest Protection Branch has long held this same view.

For this reason the Review Team believes a fuel management program must be re-introduced as a high priority in the interface zone. While forest management actions alone cannot reduce the probability of fire, strategies to reduce fuels in areas of identified risk, based on the best available science, should limit the impacts and increase the probability of successful fire suppression efforts in future interface fires.

Background on Fuel Buildup

To better understand the expert commentary heard by the Review Team and the recommendations we are putting forth, it is useful to briefly explain key concepts of forest management related to fuel buildup.

A wildfire's progress is determined by three components in the environment: weather, topography and fuels. Weather and topography are defined by nature. Fuel is the only component where human intervention has any impact. Since fuel availability influences the severity of a fire, it is a key element in understanding risk and potential damage.

For a wildfire, a buildup of vegetation is a buildup of fuel. The more fuel there is, the harder the fire is to put out. "Ladder fuels" are the most problematic. These include low branches, young trees and any other vegetation that allows the fire to climb like a ladder into the upper branches of the tree and become a "crown fire." Crown fires are the most dangerous and difficult to control, as burning embers can be spread by the wind to start new fires beyond the main fire perimeter.

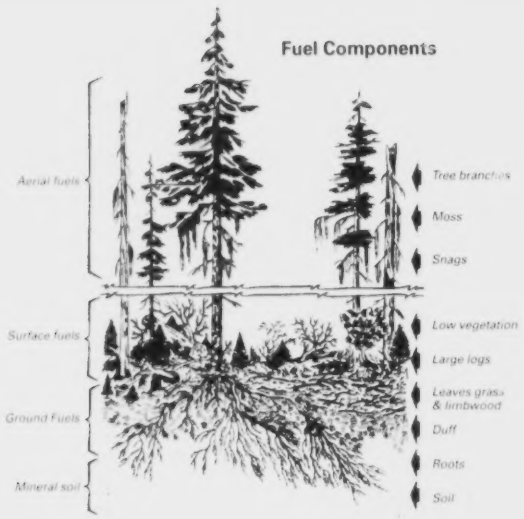


Diagram illustrates wildfire fuel components.

Forest fires have been a part of British Columbia's interior for thousands of years. Prior to European settlement, the dry low-elevation interior forests and grasslands experienced frequent, low-intensity fires every five to 20 years. Both naturally occurring or purposefully set by First Nations peoples, these fires served to reduce ground and ladder fuels as well as dead standing trees in a relatively small area.

After the late 1800's, fires became less frequent in western North America. Resource management agencies began controlling wildfires, settlers instituted local fire control measures and grazing by domestic stock removed grassland fuels that had formerly supported surface fires.

As a Ministry of Forests document referring to First Nations practices stated: *"the fire suppression policy of the BC Forest Service put a stop to most traditional landscape burning by the early 1930s. However, aboriginal burning is still carried out in BC on a much-reduced scale since reserves are federal lands and not subject to provincial regulations."*

Silviculture is a branch of forestry dealing with the development and care of forests. For the next several decades after the 1930s, controlled (prescribed) burns continued to be a popular method for disposing of slash and waste wood, but studies of its effectiveness yielded contradicting results. Provincially, total prescribed burning for silviculture purposes declined from over 90,000 hectares per year in the late 1980s to just over 10,000 hectares per year in 2000/2001.

More recently, fuel management has been a low priority in British Columbia, for these reasons:

- public concern over the smoke resulting from prescribed burns;
- strict and short windows or time frames for prescribed burning;
- increased risk of legal liability for wildfire problems;
- public concern over prescribed burns becoming out of control; and,
- lack of available funding and trained people.

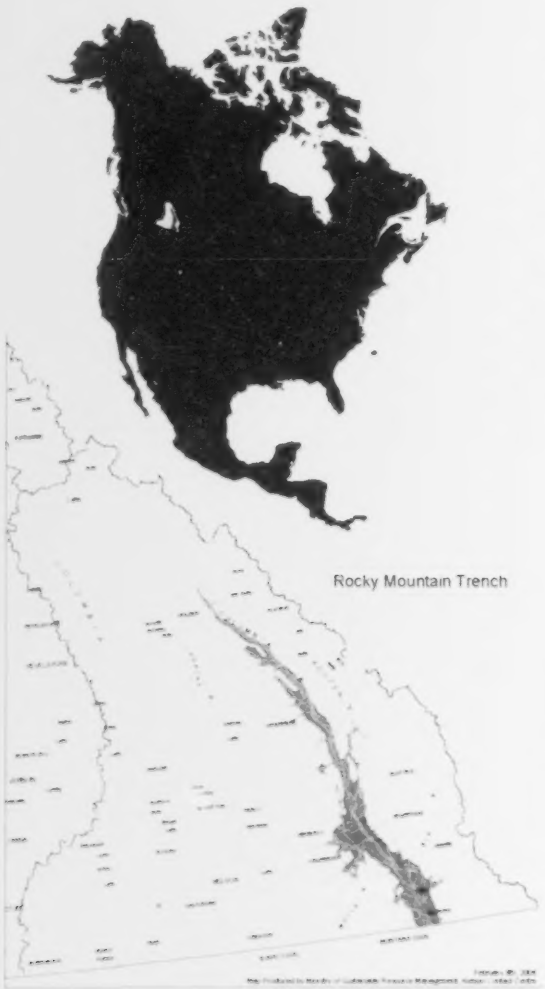
At the public meetings on Firestorm 2003, the Review Team heard several presentations from ranchers, loggers and wildlife representatives who confirmed these impediments to controlled burning. These Interior residents had used controlled burns in the past to reduce the fuel load, but are now restricted from doing so. Similarly, the Forest Protection Branch expressed frustration at the general opposition by many influential stakeholder groups to prescribed burning as a management tool.

Another consideration is the effectiveness of British Columbia's fire suppression program. Over the past decade, the success rate of initial attack by firefighting crews, measured as the number of fires contained to less than four hectares, has been 93 per cent as illustrated in the following graph.

When wildfires are successfully suppressed, the fuel that would normally burn during those fires tends to build, sometimes resulting in uncontrollable fires like those witnessed in Firestorm 2003. High fuel loads are not the only consequence of skipping disturbance intervals. Recent research shows that biodiversity and forage production are reduced, wildlife habitats are altered and the forests become susceptible to insects and diseases.

Fuel build up is particularly severe in the Rocky Mountain Trench

In the Rocky Mountain Trench region of eastern British Columbia, 70 years of fire suppression has resulted in high fuel loads, encroachment on grasslands and ingrowth, primarily by Douglas-Fir. Since 1952, the area has lost 114,000 hectares to forest encroachment and ingrowth.



A similar situation is occurring around Kamloops and the Okanagan Valley. Southern Interior residents have noticed the buildup of fuel, forest ingrowth and encroachment as well, and are very concerned about the loss of grazing land. As well as fire suppression, the increased fuel load has been attributed to slash left from logging.

Strategic Planning Needed Now

In the past decade, British Columbians experienced several significant interface fires including the Garnet Fire near Penticton and the Silver Creek Fire near Salmon Arm. However, these events appear to have had little impact on public policy. It is apparent in reviewing the history of the last decade that it has been difficult for any level of government to make meaningful changes related to fire management policy.

Policies and practices at all levels of government must be carefully reviewed as a part of the response to the fires of 2003. For instance, the Okanagan Mountain Park Fire clearly demonstrated that underestimating the impact of wildfire in resource management decisions, can have devastating impacts on British Columbia's society and environment. Management goals must be integrated with ecological principles and understanding if British Columbia is to successfully manage its fuels buildup and fire risk problem. Ownership of the problem rests with both government and private landowners.

The Review Team received a presentation from the Mayor of Logan Lake. She described the community initiative that involved the municipal government, homeowners and local youth working to fireproof their community.

In a similar vein, residents of Galiano Island made a submission to the Review Team. They recognized the fire threat on their island and spoke in favour of a cooperative program to address fuel buildup. Indeed, in their view, all of the Gulf Islands are equally threatened when it comes to wildfire.

The Review Team Recommends:

Province to Lead Strategic Plan Development

The provincial government should lead the development of a strategic plan in cooperation with local governments to improve fire prevention in the interface through fuel management. The plan should:

- **Focus on identification of those areas of the province where communities, infrastructure, and watersheds have the greatest potential to be impacted by large-scale fires.**
- **Identify and assign fuel management priorities based on threats to human life, property and resource values.**
- **Require a community protection plan in those communities with a high probability and consequence of fire in the interface zone.**
- **Be cost shared with local governments.**
- **Give priority for funding, fire management planning, fuels mitigation, and protection to these areas.**

Undertake fuel treatment pilot projects

The provincial government should undertake a series of fuel treatment pilot projects in cooperation with municipal and regional governments in locations of high interface fire risk to demonstrate and prove the social, economic, and ecological costs and benefits of fuel treatments.

The provincial government should commit new funding for its share of the fuel management program.

It is not just the responsibility of senior governments to manage these risks. Local governments and individuals must also do their part.

The Review Team Recommends:

Adopt FireSmart

Municipalities within fire prone areas should formally adopt the FireSmart (Partners in Protection 2003) standard for community protection both for private and public property.

At a minimum, this standard should be applied to all new subdivision developments.

Look at Insurance Rates

The insurance industry should encourage and reward, through its rate-setting process, dwellings and communities built to acceptable standards.

The current area estimate for the wildland urban interface, in the Southern Interior of the province, is approximately 400,000 hectares. This number is expected to grow as human development continues to push into the forest. As a result, local governments must have a strengthened mandate to provide fire protection and reduce risks through the use of fire regulation, building codes and land use restrictions.

All levels of governance must be consistent in the application of regulations and standards that relate to community protection from wildfire. Across all jurisdictions and levels of government, measures to mitigate fire risk must meet a consistent and universal standard.

Land Management Must Include Fuel Reduction

A number of Land and Resource Management Plans (LRMPs) have been developed for the province. Yet few of these plans address fire management in a meaningful way, by considering the impacts on ecosystems and the relationship to other forest management activities. Fire management considerations must become part of land management decision-making.

The Review Team Recommends:

Assess Land Use Plans

The province should review and amend Land Use Plans and LRMPs as required to incorporate fire management considerations. Fire experts must be available to influence and participate in land management planning.

Mandate for BC Parks Must Be Addressed

Similar to other areas of the province, particularly in fire-prone ecosystems, there is a growing forest health and fuels problem that poses significant fire risk not only to provincial parks and protected areas but also to the adjacent wildland urban interface.

Because a number of the major fires this past summer occurred in provincial parks and protected spaces, such as Okanagan Mountain Park, West Arm Park and Chilko Lake in the Brittany Triangle, a number of presenters expressed concern about the restrictions to forest management practices within these protected spaces which ultimately led to the development of unhealthy forests.

This concern is captured well in the following summary from the recently published book *Firestorm - The Summer BC Burned* by Ross Freake and Don Plant. The authors state:

"Professional foresters had predicted that a catastrophic

fire would engulf Okanagan Mountain Park. The 10,000 hectares of forest had been left in their natural state untouched by fire for almost 50 years. The forest floor was covered by tinder. Blocks of standing dead trees grew bigger because falling them in BC parks is forbidden. Insects killed many of them, providing more fuel."[1]

As may be seen from the answers which the Ministry of Water, Land and Air Protection provided to specific questions, given in Appendix C of the report, the BC Parks Administration believes that the Ministry of Forests, Forest Protection Branch had the authority to address these forest management, fuel reduction and forest fire attack issues, after consultation with BC Parks and subject to the BC Parks pre-attack plan for each location. Clearly the authority has been at best indirect.

Ironically, the success of fire suppression in British Columbia's forests during the past 80 years has significantly reduced wildfires and also resulted in dangerously increased fuel loads. Lack of natural wildfire has allowed the amount of mature lodgepole pine to increase to three times its normal occurrence in Interior forests. Lodgepole pine is the main tree species used by mountain pine beetle to carry out its life cycle. Excessive mature pine, together with warming climates, has created an epidemic mountain pine beetle infestation across the Interior of British Columbia, and is expected to impact four million hectares of land, much of it in protected areas.

Breeding in huge numbers across the Interior, pine beetles bore into healthy trees and eventually kill them. This infestation has been ongoing for several years and is a disaster of similar magnitude to Firestorm 2003 in terms of its destructive effect on British Columbia's forests. Though the issue is outside the Terms of Reference for this review, the pine beetle and wildfires are both natural phenomena which impact on each other in the forest environment.

BC Parks has recently recognized that more aggressive forest management activities are needed to withstand the insect epidemic. In late 2003, a BC Parks policy was approved to specifically allow for removal of trees from parks and protected areas to facilitate ecosystem restoration, human health and safety, and forest health objectives. This policy would allow for tree removal to meet broader objectives appropriate to parks, without allowing commercial logging, which is prohibited by legislation.

These tree removals would be conducted to a much higher ecological, health and safety standard, and would not focus on removing high value trees or maximizing profit. This would make the process far more costly than normal commercial harvesting. In order to fund this much-needed initiative, it is proposed to follow the Parks Canada approach of using the funds from the sale of the harvested wood to partially offset the costs.

The Review Team supports this policy initiative, which would be applied first in Manning Park and Silver Star Park, where a combination of excessive fuel loads and long-term mountain pine beetle infestation has left the forests at serious risk of wildfire damage.

Another policy initiative that will affect BC Parks is the proposed new provincial Wildfire Act, which makes it clear that the authority for acting on fire suppression within provincial parks and protected areas would in future rest with the Forest Protection Branch of the Ministry of Forests. We believe this to be an appropriate change in order to streamline decision-making in times of emergency. This will clarify the responsibility for decision-making on forest fire suppression in parks.

[1] *Freake, Ross & Plant, Don, "Firestorm - The Summer BC Burned", Copyright © 2003 by The Okanagan Valley Newspaper Group, a division of Horizon Operations (Canada) Ltd., McLelland & Stewart Ltd., pp. 14-15*

The Review Team Recommends:

Reduce Fuel Buildup in Parks

The province should allow selective tree harvesting in provincial parks to reduce fuel buildup.

Ministry of Forests Responsible for Fire Suppression in Parks

Ministry of Forests, Forest Protection Branch should take the lead in suppressing fires in provincial parks, as proposed under the new Wildfire Act.

Reduce Risk in British Columbia Forests

A status quo approach to the buildup of fuel comes with considerable risks. Clearly, a different response to the buildup of fuels in British Columbia's forests, particularly in the interface areas, is necessary. This response includes identifying the available alternatives, determining the effectiveness of each alternative and, finally, selecting the alternatives best suited to address fuel buildup in and around interface areas.

It must be remembered that fuel treatments alone will not reduce the probability of fire, but they will increase the chance of suppression success, once a fire has started. The end result must be a reduction in severity and behaviour of wildfire if fuel treatments of wildfire are to be deemed successful.

Reducing fuel buildup can be achieved using a number of recognized strategies. These include prescribed fire, thinning, thinning followed by prescribed fire, mulching and chipping, and fuel removal from the site.

Prescribed fire has been identified by many stakeholders in the province as a beneficial tool to resolving fuels and wildfire threat within the interface. In prescribed fire, fuels within certain areas are intentionally set on fire under strictly controlled conditions. These fires serve to reduce the ground and ladder fuels and remove dead standing trees, while leaving behind live trees.

However, research shows that prescribed burns have become uncommon in recent years due to:

- the inconsistent funding of prescribed burn programs;
- the failure of prescribed burns to meet stated objectives (fires escaped, or burned too hot, or didn't consume enough material); and,
- negative public response to the resulting smoke and the potential for escape.

These issues are seen as significant impediments to the widespread acceptance and use of prescribed fire in British Columbia.

Thinning is the selective removal of trees from a forest stand. This reduces the ladder fuels and number of dead standing trees, decreasing the chance of crown fires. In the forest industry, a type of thinning known as "spacing" is performed. Spacing is the cutting of undesirable trees within a young stand to reduce competition among the remaining trees. As the cut trees, known as slash, are usually not removed from the site, this practice has resulted in large areas of surface fuel throughout many parts of the province.

For the purposes of fuel reduction, the slash cannot be left behind untreated. Thinning can only be considered an option if the slash is removed or treated to significantly reduce flammability.

In mulching and chipping, the fuels are reduced to small pieces, called chips, that remain on the forest floor. The layer of chips is referred to as mulch. Reducing the size of the fuels removes ladder fuels. It also increases the speed of degradation, the process by which the wood chips slowly become soil. This is beneficial since nutrients are returned to the soil, instead of being lost in the physical removal of the fuel.

However, during the degradation process, the wood chips are still fuel for wildfires. There may be opportunities for different levels of government and individuals to work in partnership to address this issue. Energy generation and biomass technology, which utilize wood chips, have been raised as potential solutions.

The Review Team Recommends:

Use Prescribed Burning

The province should establish strictly controlled conditions for using prescribed burning as a fuel management tool.

Deal With Slash

The province should require all slash within or adjacent to a wildland urban interface to be removed, treated or burned on site to mitigate the surface fuel hazard.

Amend Forest Practices and Policy

In 1995, the Ministry of Forests separated its land management and forest protection functions, including fire suppression. While reorganization resulted in an efficient and effective fire suppression organization, some have argued that this separation of land and fire management policy and practice has also resulted in decisions being made by one group without necessarily considering the implications for the other.

For instance, the Annual Allowable Cut (AAC) sets the volume of trees available for harvest for a given tenure holder. A tenure holder pays the provincial government for the right to harvest a specified area. Often, low quality and/or low volume forest stands that are marginal or uneconomic for harvest remain uncut, creating areas of high risk for wildfire.

Regardless of the quality and volume of wood available in these high-hazard stands, the volume harvested contributes to the AAC, thereby reducing the amount of high quality wood that the tenure holder could harvest. The Review Team heard arguments that the current policy is a disincentive for tenure holders to engage in proactive fuel reduction and fire management.

Furthermore, the addition of stumpage to the basic cost of harvest often negates the economic viability of operating in low-quality tree stand areas. Stumpage is the Crown rent paid by tenure holders to cut timber on provincial land. The situation is compounded by the complexities of the international softwood lumber trading arrangements and perceived stumpage-related subsidies currently in dispute between Canada and the United States.

The move to an auction based stumpage system may provide opportunities to deal with these problems.

The Review Team Recommends:

Consider Amending the Annual Allowable Cut

The Ministry of Forests should consider amending Annual Allowable Cut determinations in fire-prone ecosystems to encourage hazard reduction treatments by tenure holders in marginal and uneconomic tree stand areas within the wildland urban interface.

Look at Alternatives to Stumpage Where Practical

The province should investigate alternatives to stumpage as an incentive to encourage the harvest of high-risk, low value fuel types.

More Research and Development

Industry should undertake research into the use of small diameter trees in non-traditional forest products markets such as energy and bio-fuel.

Train More Fuel Reduction Professionals

The Review Team heard that, with the reduced focus on fuel management in recent years, the ability to effectively treat a fuel hazard has been reduced and is becoming limited by a lack of trained, skilled people. There is a shortage of professionals who understand how fuel characteristics relate to fire behavior and who can implement a fuel reduction program while meeting complex ecological, social, and economic requirements.

The effective use and application of prescribed fire will require the continued development of a highly skilled workforce with advanced knowledge of fire ecology, fire behaviour, fire effects and the consequences of poorly designed or poorly implemented projects.

The mechanical treatment of fuel hazards is less constrained by the need for advanced training but is still reliant on the need for skilled practitioners. Much work can be done that involves the use of traditional technology including mechanical and manual techniques. However, additional training will be required for newer technology focused on altering the characteristics of the fuel through bundling, chipping and masticating.

The Review Team Recommends:

Retain the Knowledge Base

The province and the forest industry must pay particular attention to retaining the existing knowledge about fuel reduction practices and continue to develop and expand that knowledge base.

Be Partners in Research and Development

The 2003 fire season has raised many questions related to the ecological, social, and economic impacts of wildfire on communities. These questions all require timely answers if we are to maintain public safety, economic well-being and environmental quality throughout the province. Research into these issues is already being done in other jurisdictions in Canada and the United States.

The fuel types and ecosystems affected by wildfires in British Columbia and southwest Alberta this past summer are more similar to the northwest United States than the rest of Canada. Over the past two decades, devastating fires in this region of the United States have provided our neighbours with incentives to embark on a significant fire management research and development program. Many of the results of this work are now becoming available.

The Review Team Recommends:

Share Information

Wherever possible, British Columbia should focus on collaboration with North American and other jurisdictions to share knowledge and pursue research.

Preparing for Interface Fires ~ Emergency Management

Overview

By definition, emergencies occur rapidly and unexpectedly and place great stress on public services and resources. Dealing with Firestorm 2003 was bound to test the province's emergency management system to the limit. By and large, based on our analysis and public input, the Review Team believes the system worked and worked well.

Yet, as in any emergency, there are lessons to be learned and experiences to be gained. The following section of the report looks at the province's emergency management system in the context of the response to the wildfires of 2003.

In its broadest sense, emergency management is the process of preparing and providing for the prevention, mitigation, response and recovery phases of emergencies or disasters that threaten lives and property of citizens. In British Columbia there are eight recognized goals of emergency management:

- Provision for the safety and health of all responders
- Saving of lives
- Reduction of suffering
- Protection of public health
- Protection of government infrastructure
- Protection of property
- Protection of the environment
- Reduction of economic and social losses

(from Emergency Management Division Course Catalogue, JIBC, page 2)

The Provincial Emergency Program (PEP)

In British Columbia, the Provincial Emergency Program (PEP) is the designated agency set up to assist municipal and regional jurisdictions in formulating effective emergency plans to achieve the above goals. The need for this was noted in several recommendations from the province's Auditor General 2001/2002 report: *Managing Interface Fire Risks*. This effective document led to improvement in interface fire risk emergency management prior to Firestorm 2003.

The improvement was achieved through initial recommendations and a review system documented in the January 2003 Follow-up Performance Reports. Key to many of the recommendations was community involvement in the assessment and mitigation of interface fire risk, planning of emergency response, and the establishment of working relationships. These working relationships extended from the local fire departments to the Ministry of Forests, together with local firefighter training and provision of equipment.

In addition, PEP Regional Managers increased contact with local jurisdictions to assist in both the development of emergency plans and in raising awareness of interface fire risks in the province. These efforts assisted in the emergency planning and response to Firestorm 2003.

It is difficult, however, to be effective at the community level when many areas of the province do not have a documented plan to address emergencies and disasters for their residents. The basic premise of emergency management is the immediate response by local resources to the emergency, followed by assistance from neighbouring jurisdictions and higher levels of government when required.

This approach makes inherent sense during interface fires, but can only work when all jurisdictions have adequate, current emergency plans and mutual aid/automatic aid agreements in place. During Firestorm 2003 this was not always the case.

Previous reports to the provincial government, such as the Auditor General's report and the Ministry of Forests' Garnet Fire Review of 1995, addressed this concern. The Garnet Fire Review recommendation states: *"Regional Districts should be required to prepare emergency plans, and be trained to implement them, along the same lines as the requirement of municipalities."*

The Review Team received many submissions regarding the need to increase responsibility for emergency planning at the municipal/regional district level. Suggestions to achieve this ranged from a strengthened provincial mandate to voluntary cooperation and incentives.

Learning from Other Provinces and States

Submissions and witness comments from British Columbians are echoed in approaches other jurisdictions have taken, most notably California. In that state, as a result of the devastating interface fires of 1991, a Standardized Emergency Management System (SEMS) was established. The mandate states:

"By law, state agencies must use SEMS when responding to emergencies involving multiple jurisdictions or multiple agencies. Local governments are strongly encouraged to use SEMS, and they must use SEMS in order to be eligible for state funding of response related costs. While local governments are not required to take State Approved Courses of Instruction on SEMS, they are required to maintain minimum training competencies in SEMS."

Local jurisdictions in California do not have to adopt the statewide system for emergency planning. However, if they opt out, they are not reimbursed for costs they may be liable for when others expend resources on their behalf.

Quebec, on the other hand, ensures local compliance through their Civil Protection Act of 2001. This legislation ensures that regional authorities and any municipality not part of the regional authority must make agreements with other regional authorities and municipalities for establishing a civil protection plan to deal with hazards in their area. Ontario mandates emergency planning with annual benchmarks.

In many ways, the California Standard Emergency Management System is similar to the British Columbia Emergency Response Management System (BCERMS).

BCERMS has been adopted as the emergency management model by provincial agencies and by many British Columbia municipalities and regional districts on a voluntary basis. It has not, however, been adopted universally by all regional districts and municipalities.

In California there is a financial incentive to implement an emergency management system, and in Quebec there is legislative authority. In British Columbia there is neither.

Without the base knowledge of the emergency response management system, local emergency plans cannot be drafted to address needs in a consistent manner. If, as is the case presently, some regional districts do not carry out a standardized emergency plan for their area's population, it is impossible to expect that all citizens will be protected in an equitable manner if there is an interface fire.

Currently in British Columbia, unlike municipalities, it is not mandatory for regional districts to adopt emergency plans. As well, the Review Team heard comments that plans completed by municipalities and regional districts are not checked on a regular basis. This leaves large areas of the province with no emergency plan in place.

Effective emergency plans must address the hazard, risk and impact of interface wildfires. Though they can never be totally eliminated, risks can be moderated through proper prevention and hazard reduction efforts including fuel elimination strategies, land use management and zoning policies.

If an interface wildfire does occur in spite of these efforts, its impact can be reduced (but again, not eliminated) through building codes that stress the use of non-combustible building materials in at-risk areas together with a quick suppression-response capability.

The Review Team received a number of submissions dealing with the need for more effective building codes, planning practices and zoning requirements.

Some jurisdictions, including Ontario and Quebec, have adopted provincial legislation requiring the use of specific building codes. In Montana and Washington, it has been local governments that have adopted specific building codes for the interface areas.

This has led people to build homes with fire-resistant building materials and to follow wildfire prevention practices modeled after those in the Firewise Program.

This Firewise Program is similar to California's state building code, which highlights the following:

- **structural integrity** (the ability of the structure to withstand intrusion by fire)
- **defensible space** (the utilization of fuel and vegetation management techniques to reduce fire exposure to vulnerable structures and infrastructure)
- **reliability** (the ability for suppression forces to access structures and the maintenance of water supplies)

These deficiencies were highlighted in the *British Columbia Ministry of Forests' Garnet Fire Review*. Specifically, that report commented on the need for subdivision building standards, codes and regulations in municipalities and regional districts to address wildfire risk. This was in addition to the recommendation that *"residents of interface areas must take greater responsibility for minimizing the hazards of interface fires (e.g. reducing surrounding fuel, planning for evacuation, forming volunteer fire departments, et cetera)."*

What was true then is even truer today in the aftermath of Firestorm 2003.

If we are to be successful in avoiding substantial losses to property and infrastructure due to interface fires, we must examine and implement appropriate planning, building code, and hazard abatement programs that will lessen the severity when wildfires do occur. Guidelines are not sufficient, restrictive bylaws and building codes must be enacted.

The Review Team Recommends:

Require Wildfire-Proofing Across the Province

The British Columbia government should require municipal and regional governments to implement building codes and land use requirements that have proven useful elsewhere in limiting the impact of interface fires.

Preparing to Fight Wildfires in British Columbia

Firefighter response is the next critical element in wildfire impact reduction. Quick response to the interface fire in its initial stage with sufficiently trained staff, equipment and resources to contain, control and eliminate the fire is a very time-dependent operation. Presently, the Ministry of Forests responds to wildfires from 50 bases throughout the province.

This is accomplished with mobile, three-person Rapid Attack Crews who arrive at the incident scene via vehicle, helicopter or fixed-wing aircraft, sometimes parachuting to remote locations. The intent, as in all fire response activities, is to hit the fire as soon as possible with well-trained and equipped rapid-response fire crews. As well, a number of self-contained mobile 20-person Unit Crews are utilized on fires that grow to a significant size.

In total, these comprise British Columbia's summer forest firefighter contingent of 770 members. The front-line force is supplemented by the ability of the Ministry of Forests to draw upon approximately 1,200 contract firefighters and 500 fire wardens, plus crews from other provinces and from the United States. There is a well-organized structure by which wildfires in remote areas are addressed.

However, the current situation within wildland/urban interface regions is much more difficult. The local fire department may or may not respond, depending on organizational boundaries and agreements. The Ministry of Forests may respond to the wildfire situation within the interface, but if it is a structural fire (involving buildings), ministry personnel are not empowered to do anything until surrounding wildlands are threatened. Moreover, they are not generally trained in structural firefighting.

There appears to be no system in place to ensure that the closest available, effective firefighting resource is designated to respond to an interface wildfire situation. Apart from wildland fires, which are a mandated responsibility of the Forest Protection Branch, there is no mandated authority for local fire suppression.

This has led to the following situations:

- Some interface areas of the province are without a responding emergency fire department.
- Some areas with fire departments do not have authorization from their councils to attack out-of-boundary interface fires. This is true in spite of the fact that there is cost reimbursement available from the Ministry of Forests.
- Some fire departments do not have the necessary equipment to effectively respond to an interface fire.
- Some fire departments do not have effective mutual aid/automatic aid agreements.

Such was the scenario in different parts of the Interior when Firestorm 2003 began. The Review Team heard many comments about the need to address these shortcomings. It is unacceptable that emergency responding agencies are prevented from working together as effectively as possible. Other jurisdictions have found effective means by which this can occur, most notably

through mutual aid agreements and through adopting the principle of automatic aid. Mutual aid is based upon the following reasonable assumptions:

- It is economically impossible for every municipality or regional district to have all necessary equipment and personnel for every emergency situation.
- If one area helps another, there can be a time when assistance is reciprocated.
- By responding to another area's need, a wildfire interface situation could be averted before it crosses into a neighbouring jurisdiction.

Automatic Aid embodies the concept of allowing the closest fire department or emergency responder to provide emergency response services regardless of local jurisdictional boundaries and without having to wait for the jurisdiction where the emergency is occuring to request assistance. A formal Automatic Aid agreement identifies what types of emergencies (e.g. structural fire fighting, rescue and/or motor vehicle extrication will be provided), the type of apparatus and number of firefighters required for the initial response. It also establishes a fee for the service being provided.

It should be noted that the states of California and Oregon respond to wildland/urban interface fires through an integrated and well thought out system of mutual aid agreements. There is an organized structure with operating guidelines to expeditiously mobilize and direct fire services using the assumed prior existence of mutual aid agreements. These agreements ensure that local, regional and even state firefighting forces are able to work together to cope with local emergencies.

As noted in the Oregon Fire Service Mobilization Plan of 2003, *"The primary purpose of mutual aid is to supplement resources of a fire agency during time of critical need. Mutual aid is based upon reciprocal, non-reimbursed contributions for services rendered and is contingent upon a responding chief's approval. Mutual aid is given only when equipment and resources are available and dispatch will not jeopardize local firefighting capabilities."*

In British Columbia, not every area has a mutual aid/automatic aid plan, nor does every area have an emergency plan. Indeed, the Review Team was told that Fire Chiefs in the Thompson Nicola Regional District agreed on the need for organization and mutual aid, but were turned down by the Thompson Nicola Regional District. To be effective, the system requires such mutual aid agreements.

Firefighters told the Review Team that they would like to acquire a greater range of skills and training for interface fire suppression. For example, wildfire fighters from the Ministry of Forests expressed a desire to become better trained in structural firefighting techniques while structural firefighters, both career and volunteer, wanted basic training in the techniques and special risks of forest firefighting. We believe this cross training would be a valuable asset to both groups, and would likely reduce risk and damage from interface fires.

It was clear during last summer's wildfires that there is a need to explore how British Columbia's structural and forest fire resources could be better coordinated and integrated when dealing with interface fires.

The Review Team Recommends:

Make Local Emergency Plans Mandatory

As is the case for municipal governments, regional districts should be required through legislation to provide local emergency plans developed to a provincial standard and maintained to a current status.

- Local plans should be based on the British Columbia Emergency Response Management System (BCERMS).
- Plans should be in a standardized format/template consistent across the province, and be made consistent with provincial plans.
- Plans should be developed from an "all hazards" perspective.
- Plans must be practical, comprehensive and updated annually.
- Plans must include mandatory mutual aid agreements among municipal and regional districts.
- Plans must incorporate clear obligations and personal responsibilities of residents living in interface fire hazard areas.
- Ideally, plans should include First Nations involvement.
- Plans must have a communications element that incorporates local media into the disaster response effort.

Maximize British Columbia's Firefighting Expertise

Provincial and local governments should ensure both forest firefighters and structural firefighters are given some basic training in each other's area of competence.

The province should establish a working group of officials from a broad spectrum of interface fire responder agencies, fire training agencies, fire prevention agencies, persons with firefighting expertise, and other appropriate members to examine best practices relating to interface fires and recommend changes to government.

Adopt Automatic Aid

The province should adopt the principle of automatic aid to ensure that emergency services can be delivered in all areas of the province under the mandatory emergency plans.

Responding to Interface Fires ~ Command and Control

In recent years, the province has adopted an integrated response model that enables immediate activation of personnel and resources during times of emergency. Throughout the Firestorm 2003 consultation process, the Review Team heard numerous comments about the overall management of last summer's emergency.

While the general consensus is that the system worked relatively well during much of Firestorm 2003, there were concerns expressed by some presenters as to the province's overall command and control structures. The criticisms the Review Team heard ranged from "too many bosses", to "no one running the ship", to "lack of coordination" to "jurisdictions and responsibilities were confusing".

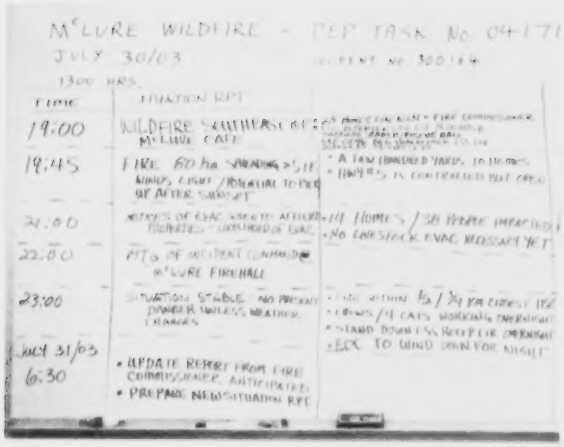
These comments were made primarily respecting the early days of the emergency operations centres, in the initial stages of the emerging disaster.

In the past, to meet the diverse needs of different regions of the province, the British Columbia government developed an "all hazards" provincial emergency operations system. The British Columbia Emergency Response Management System (BCERMS) is built upon and has adopted much of the Incident Command System (ICS) used in other jurisdictions, including the United States, Alberta and Ontario. The ICS has been tried and tested in many jurisdictions and has been found to be an appropriate system with established near-universal standards. While some modifications were made to meet British Columbia's unique needs, there is a common terminology used throughout the ICS universe.

ICS is a command and control system delineating job responsibilities within an organizational structure for the purpose of managing day-to-day operations during emergency incidents. While originally developed for wildland incidents, the system can also be applied easily to day-to-day fire and rescue operations in urban interface areas. The system is flexible enough to manage large catastrophic events involving thousands of emergency response and management personnel.

Individuals in authority within the provincial emergency structure must have the knowledge, skills and attitudes necessary to successfully command operations at large-scale disasters such as last summer's firestorm. As presented at fire and emergency command training courses, ICS includes the following components:

- pre-hazard identification and analysis (pre-incident planning and mitigation);
- control of incident operations (area command, command structure resource management);
- planning (developing an incident action plan);
- hazard-specific operation (firefighter safety and property preservation);



- resources (human and capital);
- logistics and finance
  (key resource, logistic and finance issues);
- Emergency Operations Centre
  (functions, resources and services available);
- evacuation and shelters (fire department role); and,
- recovery (short and long term, post incident analysis).

The ICS is only as good as its application and delivery by the emergency management personnel in charge of operations. It is essential that all staff know their responsibilities, understand the reporting relationships, and use a common language.

The following quote sums it up: "Words must have a single definition, functional areas must have one set of responsibilities, and no two words may have the same definition. If this axiom is changed, confusion is introduced into the conveyance of information, orders, et cetera." (from Command and Control of Fire Department Operations at Target Hazards, Student Manual, United States Fire Administration National Fire Academy, July 2003, Pages 2-3).

During the public consultation sessions there were many comments on the ICS, some of which were positive, but some of which focused on the lack of effective application. In the early days of the summer's firestorms, there was apparent confusion. While staff had been schooled in ICS and had some opportunities to practice, the firestorms challenged the application of their skills. From all comments and observations, it appears that once the initial problems were worked out, ICS functioned well.

PEP officials consider the province to have the best emergency management response system in the country. To ensure public safety, no less should be expected.

However, there needs to be standardization and uniformity of training across provincial, municipal and regional agencies and between jurisdictions. There are internationally recognized competency standards for fire fighting and emergency training, but within the province there is disagreement among agencies not only as to which standards to adopt but whether to recognize each other's standards.

Three separate ministries are involved in providing training for emergency responders. Each ministry appears to have its own separate training system. This contributes to varying degrees of understanding among personnel. The ministries also have differing methods of funding courses. For example:

- Outside forest fire fighting contractors receive ICS training at a variety of community colleges at their own expense.
- The Provincial Emergency Program uses Justice Institute of British Columbia (JIBC) Emergency Management Division to provide contracted courses in a variety of emergency management subjects.
- However, ICS is not a funded course by them for delivery. Instead, in excess of 2,300 people have either directly paid or had their organizations pay the Emergency Management Division of the JIBC to complete the ICS 100 to 300 courses.
- The provincial Office of the Fire Commissioner (OFC) does not fund any type of ICS training for fire service. Instead this basic element is offered by the Fire and Safety Division of the JIBC in Emergency Scene Management 1, 2 and 3 courses on a cost recovery basis.
- Keep in mind that ICS is an everyday working tool needed by all firefighters and Fire Officers for effective, standardized operations and is outlined as part of meeting the NFPA Standard 1021 for Fire Officer Professional Qualifications. NFPA Standards have been adopted for fire fighter training in British Columbia.

A patchwork approach to funding, course content and qualifying standards is inconsistent with an integrated command system approach to managing emergencies within the province.

Other jurisdictions have improved their approaches to training and have developed models suitable to their jurisdictions. The states of California and Oregon have embarked upon a better training delivery system to ensure that emergency responders can effectively work together. In large part this was achieved through the active involvement of local practitioners working cooperatively with state officials.

Within Canada, the province of Manitoba has a provincial fire college that provides consistent training to all firefighters within the province and to firefighters from other jurisdictions. Alberta also uses a fire college.

Some of the apparent confusion in the early days of Firestorm of 2003 may be attributable to these shortcomings and inconsistencies in emergency command and control training.

Although there remain shortcomings, the Provincial Emergency Program has made significant improvements to the delivery of emergency management services in British Columbia over the past four years. The major changes include:

- the adoption of the Integrated Response Model, BCERMS;
- the use of the Temporary Emergency Assignment Management System (TEAMS); and,
- the development of Provincial Regional Emergency Operations Centres (PREOCs) capable of immediate activation.

These initiatives have significantly strengthened the province's ability to work with and support local governments in response to all-hazard emergencies. Yet, given the concerns raised during the consultation process, British Columbia's emergency response could be further strengthened by ensuring that all personnel within the ICS system, regardless of their organization

of origin, have a common understanding of terms and definitions and modules of operation.

The Review Team Recommends:

Standardize BCERMS and ICS Use and Training

To gain the full value of BCERMS and the ICS it must be universally adopted by all provincial and local government agencies.

Training course material, delivery and examination for ICS should be standardized across organizations.

The province should consider the establishment of a single, province-wide focus for training within British Columbia to achieve:

- **Implementation of consistent standards and policies for the Office of the Fire Commissioner, Ministry of Forests, and the Provincial Emergency Program to allow integration from within the province's emergency response structure.**
- **Development and continual upgrading of a common curriculum for all ICS training in British Columbia.**

Standardized programs for local and regional delivery

To be effective in time of need, a command and control system must be applied in a consistent way by all users. This requires people to stay current with changes in technology and procedures. Continuing education credits are a well-recognized requirement in many professions and should apply to emergency response personnel.

The Review Team Recommends:

Continuing Education

Maintaining ICS accreditation over time should be dependent on a system of continuing education credits and participation in regularly-scheduled, integrated simulations using ICS.

Responding to Interface Fires ~ Communication

Communication was one of the central themes that emerged during the Review Team's consultation process and was an issue in every community. Almost all aspects of the response to the 2003 wildfires involved communication in some form or another.

Comments ranged from positive, particularly in relation to the Kelowna wildfires, to critical, especially in the context of the Barriere and McLure wildfires. On the whole, there was a consensus that there is considerable room for improvement in this area.

Inter-Agency Communications

There were a myriad of federal, provincial, regional and municipal agencies involved in the response to the 2003 interface fires as well as many non-government and volunteer organizations. The sheer size and complexity of the fires, combined with the number of organizations involved, was bound to test the limits of inter-agency communications.

The Review Team heard many examples of inter-agency communications that were less than ideal. This was particularly noticeable in the early wildfires around Barriere, Chase, Kamloops, and in the southern Okanagan. Next to the wildfires themselves, the most lasting impression many people have of Firestorm 2003 is the information vacuum they found themselves in during the crisis.

It can be concluded without hesitation that at times there was a significant gap in communications among the various agencies involved in the disaster response. This left far too many people affected by the wildfires questioning who was in charge, where could they have obtained timely information, and would it be accurate?

Due to the unique and pervasive role of communications in all aspects of emergency planning, response and recovery it is useful to provide a more detailed description of the comments received by the Review Team and the problems encountered by the citizens themselves.

John Slater, the Mayor of Osoyoos, expressed concerns regarding the lack of communication between such groups as the Office of the Fire Commissioner, the Interior Health Authority and the Ministry of Forests. According to Mayor Slater, information officers in these agencies did not communicate with each other, and at times, each transposed communication into different words and meanings, resulting in incorrect information being released to the media.

The lack of inter-agency communication caused concern among other locally elected officials, who in some instances felt they were out of the information loop at

critical periods during the fires. Both Mel Rothenburger, Mayor of Kamloops, and John Ranta, Chair of the Thompson Nicola Regional District (TNRD), voiced concern regarding what they saw as a lack of a clear strategy for elected officials to access available information.

The TNRD presentation stated "Even local politicians who are generally charged with providing up to date information on community issues were often unaware of the status of event or left out of the picture altogether."

For too many of those affected by the 2003 wildfires, this deficiency in inter-agency communication is best summarized by the comments of a presenter who said, "a lack of timely accurate information contributed to tension, anxiety and fear."

To be fair, not all commentary around communications was critical. Al Kirkwood, Chief of the Barriere Volunteer Fire Department, noted the tremendous cooperation his community experienced from the British Columbia Forest Protection Branch. Mayor Andy Kormendy of Ashcroft recalled how in his experience the Provincial Emergency Operations Centre worked to ensure that all parties were briefed on activities throughout the area.

The Columbia Shuswap Regional District stated in its submission that communication among groups such as the RCMP, Ministry of Forests, the City of Vernon, PEP, and the Regional District was initially non-existent. However, as the reality of the wildfire disaster emerged, over the next several days communications improved and inter-agency responsibilities, jurisdictions and control were established.

In general it was clear that as the fire season progressed, inter-agency communications improved dramatically and many of the issues were resolved.

That it took time to achieve an improvement in communications can be attributed to a number of things. Many of the individuals involved had no exposure to events of this magnitude and, as a result, they were learning quickly as their experience grew.

The effectiveness of inter-agency communications is also a function of command and control, which is dealt with in the preceding section of this report.

Consultation comments suggest that significant value could come from continuing and intensifying British Columbia's inter-agency training, including participation by emergency teams in large-scale simulations of interface wildfires. Also needed is the development of an overall communications strategy/protocol for major events to define the roles, responsibilities and obligations of those involved.

Communicating with the Public and the Media

Another key aspect of communications focused on how effectively officials provided information to the public and the media. There were divergent viewpoints regarding how local and provincial officials disseminated information to residents affected by the wildfires.

In the early stages of this wildfire season, the flow of information from officials to the public and the media was an issue of great concern. The Review Team received presentations stating that the information provided on specific fires was exaggerated and inaccurate. For example, concerns were expressed about media reports that claimed the town of Barriere had been destroyed.

Similar concerns were expressed about reports of the lodge at Cathedral Lakes being burned, when in fact it had not, and about structural damage in the town of Ashcroft, when none had occurred. Without doubt, hearing reports such as these caused great anguish, grief and confusion among the people of these communities.

On the other hand, in the case of the Kelowna wildfires, local and provincial officials worked diligently to keep the media and the public well informed. The CBC stated in its presentation to the Review Team:

"Officials such as Mayor Walter Gray and Fire Chief Gerry Zimmerman told us everything they knew as soon as they knew it. Officials with the Ministry of Forests provided access to the Kelowna fire to dozens of reporters using a convoy of city buses."

The Review Team also heard that up to six or seven news releases were issued on a daily basis and designated spokespeople were readily available to update the media.

From the perspective of some of the media covering the wildfires, there were also concerns about the flow, timeliness and accuracy of information provided. In its presentation, the CBC pointed to a lack of timely information in the McLure and Barriere wildfires. Some media personnel believed that emergency officials were clamping down on information and not providing reasonable access to the fire zones, forcing reporters and camera crews to get behind fire lines without permission.

The Fire Chief of Barriere shared these reservations about the way communications were handled and stated in his presentation to the Review Team, "the media should have been informed right out, first and foremost."

The Incident Commander at Barriere confirmed to the Review Team that he ordered the media be kept out of the fire area because he was concerned for their safety. His justification was that the media would get in the way of emergency crews and pose a hazard.

The Review Team was also told that during the early part of the wildfires there was a lack of trained staff able to deal with the media in a professional manner. The Thompson-Nicola Regional District wrote: "media presentations held in Kamloops seemed to be aimed at stemming the media onslaught rather than providing the information truly required by the people impacted by the wildfires."

This view was echoed by some in the media who described the early response to the communication need as woefully inadequate.

Fundamentally, one can conclude that during the initial interface fires there was a lack of understanding about the role of the media and the assistance they could provide in helping to inform the public. In contrast, and perhaps learning from the initial experiences of those involved in the McLure, Barriere and

Kamloops wildfires, the response of provincial and local officials during the later wildfires was focused on ensuring the public and the media received the latest available information in a timely, forthright and accurate manner.

With respect to inter-agency communications, the marked improvement in media comm.unications over the course of the fires suggests there are some lessons to be learned. In particular, the public must receive timely and accurate information right from the beginning of the emergency. To that end, management personnel should focus on delivering information as opposed to managing the message.

As a first step, the provincial government needs to develop a crisis communications strategy that uses all available resources, including the media and the internet, to ensure timely delivery of accurate information to the public.

The Review Team Recommends:

Develop a Crisis Communications Strategy

The province should immediately undertake the development of a provincial communications strategy and protocol for major emergency events defining the roles and responsibilities of those involved. The strategy should:

- **Include the participation of all key stakeholders including the media.**
- **Establish clear principles and protocols about the release of information.**
- **Identify how the media and the internet can be used in times of emergency as a technical resource and to disseminate information to the public.**

The government should catalogue the communications experiences of the summer of 2003 and the improvements that occurred over the course of the fire season so that valuable lessons are not lost.

Information officers in all levels of government should be trained in media relations so they can anticipate and meet crisis-situation needs. Large-scale, unpredictable events that unfold rapidly often create unique information challenges. Specialized training and strategies are required to deal with natural disasters and public emergencies from a communications standpoint.

The Review Team Recommends:

Establish Emergency Communications SWAT Team

To coordinate on-site communications during times of emergency, the province should establish a media communications SWAT team with members from municipal, regional, provincial and federal governments and including other major stakeholders as appropriate.

The members of this team would be trained in crisis communications and would serve to facilitate, not stem, the flow of information.

Cooperate on Training

All jurisdictions should consider intensifying inter-agency training efforts, including the use of large-scale interface wildfire simulations, to improve communications.

Good communications within the command and control structure is essential to successful management of an emergency event. The experience of last summer confirmed that the more these skills are used, the stronger they get. Practice is important and all agencies involved should be encouraged to undertake inter-agency communications training on an ongoing basis.

Communications Technology

Another key communications issue brought to the attention of the Review Team was the varying state of emergency communications technology across British Columbia. By emergency communications, the Review Team is referring to systems and procedures by which calls for service are received, processed and prioritized and then used as the basis for alerting and dispatching emergency responders to the scene. Communications technology is used to receive the request for assistance, coordinate the response, record the incident and dispatch resources.

During the 2003 interface fires, it was apparent that there were many emergency communications technology issues. For example:

- the capacity of some systems was exceeded;
- emergency phone systems were overwhelmed with calls; and,
- radio systems built for fire departments were not sufficiently expandable to manage all of the additional responders who arrived to assist.

As well, there were problems with compatibility of various systems, preventing complete communications between crews from various regions of the province and from outside the province.

Though many of these deficiencies were known prior to the 2003 fire season, it took an event like last summer's firestorm to demonstrate the problem. The Review Team received a number of presentations that pointed out the non-compatibility of communications equipment and, in some cases, the absence of it. The comment was made that at times, this left the communication of fire, weather, and other vital information up to chance.

Specific problems encountered with communications equipment include the following:

- some of the responding fire departments use proprietary radio systems that currently do not function in more remote areas.
- some designated VHF emergency radio channels cannot be programmed into some of the newer radios.
- many fire departments have inter-operable radio systems but police, ambulance, forestry and air support may lack this compatibility.

The Review Team Recommends:

Achieve Emergency Radio Inter-Operability

The British Columbia government should develop and implement a provincial strategy for emergency communications technology focused on moving over time to total inter-operability across agencies throughout the province.

Initial activities should include developing a provincial inventory for all fire, police, ambulance, forestry radios and frequencies to ensure that where radio systems are compatible, they can be programmed with common frequencies or talk groups.

Whenever portable and mobile radios for emergency services are replaced to accommodate narrow banding, they should be replaced with new radios that are inter-operable across agencies.

Amateur Radio

In the consultation process, the Review Team also heard about the important role that amateur radio operators played during Firestorm 2003. When emergency radio systems failed and cellular coverage was lost in some areas, the amateur radio operators were an invaluable, but at times overlooked resource.

During the wildfires, the amateur radio operators proved to be very resourceful, and demonstrated their commitment and dedication by relaying vital information over the airwaves.

However, some people did not consider them to be an integral part of the emergency response system. There appeared to be a lack of understanding and appreciation among some emergency agencies about the value of local amateur radio operators.

The Review Team noted that when the amateur radio groups were finally called upon, in some instances they were forced to improvise in order to support the communications effort. At times, the amateur operators were not assigned space in the Emergency Operations Centre.

The Review Team Recommends:

Include Amateur Radio Operators in Emergency Response

All Emergency Operation Centres should include a provision for amateur radio operators, including power and antenna space, in case they are needed.

Communications Systems should be regularly exercised to ensure that equipment, policies and procedures are functional.

Public Education

All demographic indicators point to the continued increase of population in British Columbia's wildfire interface areas. Those who choose to live in close proximity to the forests must recognize that they are placing themselves at increased risk from the dangers of wildfire.

In particular, some presenters in the consultation process emphasized the need to educate city dwellers - such as cabin owners, campers and other seasonal residents and visitors - about the risks they face. Presenters also noted the need to inform and remind all citizens annually, prior to the fire season, about the wildfire risk in the Interior.

Perhaps most importantly, presenters stressed the need for regular information about basic responsibilities and escape routes during an evacuation.

Firefighters told the Review Team that the public has misconceptions about forest firefighting. For example, during Firestorm 2003 many people believed that human intervention could halt any fire and the failure to do so was because of human error. Whereas in reality, only Mother Nature could stop a rank five or six wildfire, as was experienced in several instances last summer.

There is a strong need to better inform and educate the general public, and interface residents in particular, about the dangers, risks and realities of forest fires. Public education is also needed to explain the preventative and protective measures that individuals who live in the interface can adopt to make their lives safer.

Much valuable information has been developed by many agencies for this very purpose. For example, some parts of the National Fire Protection Association's (NFPA) Risk Watch program is being successfully implemented in Alberta, Saskatchewan and Ontario.

The program's components include a guide on general preparedness for earthquakes, floods, hurricanes, tornadoes, wildfires and severe winter storms.

Another NFPA program circulating in the US, that could be adapted for British Columbia, is the Firewise process for interface homeowners.

Both of these NFPA public education programs would assist those living in interface areas to understand procedures they might undertake to better prepare themselves and their fellow residents for the ravages of a wildfire.

Closer to home, the Ministry of Forests provides a variety of educational materials about fireproofing interface subdivisions and dwellings in its Fire Smart program. Public meetings have been held and printed materials have been distributed in British Columbia over the last two decades on these topics.

Similarly, the Insurance Bureau of Canada has developed and distributed excellent educational material.

A review of material from many jurisdictions, nationally and internationally, suggests that most successful fire prevention and emergency planning programs place a major responsibility for reducing the risks of living in wildland/urban interface areas on the homeowner.

Unfortunately, the past summer's destruction and losses would indicate that many British Columbian's are not aware of the things they must do to make living in interface communities safer.

Public education, combined with more appropriate building codes and well-developed subdivision plans, is essential.

The Review Team Recommends:

Educate the Public about Interface Wildfires

A cooperative public education program should be undertaken, building on material already available in various British Columbia government departments and agencies, as well as from external sources.

This education campaign must inform interface residents about the risks and their responsibilities in planning and preparing for and responding to interface fires.

The campaign should be delivered to school children as well as adults.

Municipal and regional governments should regularly distribute educational materials to interface residents.

Insurance agents should distribute educational materials with each policy renewal of an interface dwelling.

Responding to Interface Fires ~ Evacuation

The Review Team received significant public and stakeholder input about the evacuation phase of Firestorm 2003. More people evacuated their homes and sought assistance from the province through Emergency Social Services (ESS) Reception Centers during Firestorm 2003 than for any other disaster in British Columbia's history.

Approximately 45,000 residents were forced from their homes by the encroaching wildfires, and sought temporary paid accommodations elsewhere. Thousands more stayed with friends or relatives, or fended for themselves without government assistance. Some people were evacuated on more than one occasion.

Some citizens also endured either the interruption, or in some cases, the complete destruction of their livelihoods. Many others lost their homes to the ravages of the firestorms. The stress and financial impact of being evacuated from one's home, business and community was an issue of great importance to many presenters.

During the summer of 2003, the provincial Office of the Fire Commissioner (OFC) issued 122 Evacuation Alerts and 66 Evacuation Orders. The fact that no lives were lost during the evacuations is testimony to the overall success of the evacuation procedures. Clearly, officials preferred to err on the side of caution when evacuation orders were issued.

Concerns Expressed

Despite the general success of the evacuation phase, the Review Team heard considerable concern expressed about specific evacuations. This is not surprising. By their very nature, evacuations operate under very severe conditions. In the case of Firestorm 2003, the conditions were unprecedented.

Many people spoke of the slowness of the evacuation process. Others expressed the need for earlier notification to evacuate. Some stated that their evacuations were needless, and there were those residents who did not evacuate even when told to do so.

There were also a number of comments and submissions applauding the efforts of the people responsible for running the evacuation centres, and the effective way in which evacuations were accomplished, given their magnitude and urgency.

The Review Team occasionally heard that the process by which evacuations were determined was overly bureaucratic and complex. On some occasions the Review Team received comments from individuals who said that, if faced with a similar wildfire situation in the future, they would not evacuate.

In spite of these criticisms, the overriding measure of success of the evacuations undertaken in Firestorm 2003 is shown by the fact that no residents lost their

lives or suffered serious injury. In similar emergencies in other jurisdictions, like the California wildfires later in 2003, many people were not as fortunate.

How the Evacuation Process Works

Perceptions are important. British Columbians need to have confidence in the system, so that when evacuation decisions are made the protection of human life will remain paramount over other considerations.

There is always room for improvement, and on the basis of the information provided to the Review Team we believe there are areas that could be strengthened.

First we need to explain the evacuation process used during Firestorm 2003. It was as follows:

1. The on-scene Incident Commander (IC) received advice when time permitted from the fire behaviour specialist and the weather behaviour specialist. Based on this advice, the IC made a determination as to whether or not an evacuation was required.

2. Dependent upon the circumstance, the IC may have made an immediate tactical evacuation order under the Forest Practices Code, but in all cases notified the Ministry Regional Operations Center (MROC) as to the decision.

3. With respect to strategic evacuations, the MROC passed information to the Evacuation Branch Coordinator, a position staffed by the OFC, for assessment and authority to proceed. Strategic evacuations are only made on the advice of the incident commander. The Evacuation Branch usually contacted the locally affected Emergency Operations Center (EOC) to determine evacuation boundaries and priorities. Some areas had no EOC. In many instances, maps were not reliable and could not be used, or they had to be amended in order to make sense to the people involved.

4. After the Evacuation Branch had formalized the order, under Section 25 of the Fire Services Act, an Evacuation Order was issued to the local EOC. This meant having the Fire Commissioner sign the order in Victoria.

5. Then the EOC had the notices delivered to residents as a physical notification by RCMP and/or local fire departments, search and rescue teams, and bylaw enforcement personnel. The EOC also notified the media, designated evacuation routes and arranged for evacuees' shelter through Emergency Social Services.

While this process includes checks and balances to ensure each step of the evacuation is done prudently, it may rely too heavily on a rigid approval hierarchy.

There are several methods and legal instruments by which people may be ordered to leave a wildland/urban interface fire area, including:

- Section 85 of The Forest Practices Code, which allows a designated forest official to order a person to leave an area if the government is engaged in fire control or suppression. This is usually used tactically when the on-scene Incident Commander has the need to concentrate upon the fire dangers at hand without the immediate worry of persons being at risk. When this tactical order is formalized by submission to the OFC, people can then be ordered to evacuate the area.
- Section 25 of the Fire Services Act gives authority to the Fire Commissioner to evacuate a building or area if it is felt there are persons in imminent danger. This authority is also delegated to municipal fire services through the Community Charter but must be adopted through a by-law.

- A local authority declares a state of local emergency. The power to do this rests with a municipal mayor and council or regional district's chair and board as defined in the Emergency Program Act. A mandatory evacuation can then be undertaken in those areas within their authority.
- When a provincial state of emergency is declared, the minister responsible (or designate) for the Emergency Program Act may order an evacuation. In Firestorm 2003, it was the Office of the Fire Commissioner who issued the order in Victoria.

The process is designed to ensure maximum public safety in the face of life-threatening wildland and interface fires, but it does not adequately take into account local knowledge and expertise. There may be instances where local officials, together with emergency personnel and municipal/regional district employees, have a higher degree of knowledge about local road networks, power grids, water systems and other vital infrastructure. This is likely more important to the evacuation decision than the information available centrally in Victoria. Access to local knowledge is particularly important when the Incident Commander is not present in the community that is being evacuated.

The Review Team Recommends:

Allow More Local Decision Making on Evacuations

The requirements for issuance and lifting of evacuation orders should be reviewed by the provincial government to ensure that decisions can be made by those people with the best information, closest to the action, who are competent to do so. Decisions should not always be dependent on the Office of the Fire Commissioner in Victoria.

Increase Understanding of the Evacuation Process

The province should target greater resources at ensuring better awareness by the public about the stages of evacuation, including the procedures to be followed during an evacuation and after the lifting of an evacuation order, particularly in areas of high interface fire risk.

The procedures and powers of the police should be clarified and the permit re-entry process standardized so that all affected responders, evacuees, media and others understand the process, its logic and the location of the permit issuing authority.

Helping the Evacuees

With evacuation came the need for government to provide housing, food and clothing for up to 72 hours if evacuees did not have sufficient resources to do so themselves. With the number of evacuees involved, it was inevitable there would be some problems.

The Review Team heard comments about long line-ups to register at the Emergency Social Services Reception Centre, overly complicated forms to fill out, and unavailability of forms. Others commented on inequities in treatment of evacuees and distribution of benefits.

The Review Team Recommends:

Simplify Access to Post-Evacuation Assistance

The appropriate agencies should streamline and simplify registration processes and procedures, making it easier for wildfire evacuees to obtain the basic necessities of life during an already stressful time.

Responding to Interface Fires ~ Resources

Firefighting Equipment

The Review Team heard a wide variety of comments and concerns with respect to the availability and utilization of firefighting equipment. Individuals involved in early fire suppression efforts in Barriere, McLure and Osoyoos felt there was a lack of appropriate firefighting equipment to adequately handle the first response to the fires.

The Review Team also heard contrasting concerns that too much equipment was brought in from other areas of the province to fight fires in larger communities later in the fire season and that some of the equipment brought to the scene was inappropriate, obsolete or ill maintained.

The magnitude of the Firestorm of 2003 highlighted the need to quickly and accurately locate firefighting resources from across the province when an interface wildfire strikes. It also demonstrated that there is no central system in place in British Columbia to allow this to be done in an effective and efficient manner.

There are nearly 400 fulltime and volunteer fire departments protecting communities in British Columbia. Each of these departments has various assets including their fire apparatus, various sizes and lengths of hose, nozzles, ground ladders and hundreds of other items of equipment. At this time, there is no system or method in the province by which all of this equipment is catalogued in a searchable database. As a result there is no way an incident commander can be assured that they will be able to locate additional equipment needed or find the closest source of that equipment.

During Firestorm 2003, equipment was requested from a fire department on the lower end of Vancouver Island to assist at a fire in the Okanagan. The crew took the ferry to Vancouver and then drove most of the night to get to the scene of the fire. Upon arrival, crew members found they were the first mutual aid unit to arrive at the scene, having passed several dozen other fire departments along the way.

This should not be a difficult problem to solve. More and more fire departments are utilizing technology to keep track of their equipment inventories and inspection records. Many fire departments either already have or are in the process of implementing record management systems that track all aspects of their operations.

Where the information already exists, it should not be difficult or expensive to collect the equipment inventories in a central database where it could be easily accessed in a time of need. Where fire departments do not already have the ability to electronically catalogue their equipment, a template could be developed and provided by the organization managing the central database.

A model for this system is currently being implemented in this province to provide for an integrated police records management system. This system, called BC Prime, was piloted by the police departments in Vancouver, Port Moody and Richmond, and is now being implemented province wide.

The Review Team Recommends:

Implement Firefighting Equipment Database

The Office of the Fire Commissioner should implement a searchable database to maintain a current and accurate province-wide inventory of private and public sector equipment available for fire response.

Local Knowledge and Human Resources

In every community visited by the Review Team, the use of local knowledge and people was discussed. Residents, industry representatives and First Nations expressed concerns that the experience and expertise available in communities affected by the fires were not properly utilized, if at all.

The Review Team heard a strong desire and willingness by many local people to help during the emergency periods of Firestorm 2003. Many expressed their frustration at being turned away, while out-of-province crews were called in to work on the fires. More importantly, we were told that because crews from out of the area often lacked a local resident as part of their team, they were unaware of the location of back roads, accessible water supplies, or available equipment and resources.

Many presenters provided compelling arguments with respect to the availability of a highly skilled private sector workforce ready and willing to assist in fire suppression efforts. These workers include independent loggers, contract logging companies, and forest industry employees possessing knowledge of local roads, weather and terrain.

However, many of these individuals have not maintained a current S100 certification and the Ministry of Forests, Forest Protection Branch can only employ certified individuals on the fire line. Many residents believe that the Forest Protection Branch could utilize local resources and equipment better in the future. As argued by one presenter, the effective utilization of available industry resources may reduce firefighting costs to government. More importantly, British Columbians cannot rely on the level of support they received from out-of-province and military personnel, in future forest fire seasons.

The Review Team also heard concerns regarding the use of local resources from First Nations in the province. Many members of First Nations communities were willing and qualified to assist provincial firefighters with their own equipment, but claim they were not approached to do so.

Pre-emergency planning is essential to ensure the most effective use of the local resources and knowledge. This can be accomplished, for example, through local planning committees, firefighter registration processes and the development of databases which provide up-to-date information on the qualifications and expertise of local residents, contractors, business people and First Nations communities.

It should be mentioned that this type of committee and pre-planning process currently exists in some areas of the province. In a written submission to the Review Team, Denis Gaudry, Manager of the Kamloops Fire Centre, refers to a grassroots organization of volunteers,

fire wardens, special ground patrol resources and contractors used by the Kamloops Forest Service. The management of this resource is called Pre-Organization Preparedness and, according to Gaudry, has served the community well.

The Review Team Recommends:

Access Local Firefighting Expertise

The Ministry of Forests, Forest Protection Branch should implement a modern records management system to maintain a current and accurate province-wide inventory of certified forest firefighters available for fire response at the local level.

The Forest Protection Branch should consider some mechanism, other than retaking the S100, that allows past experience in the forest industry or fire fighting to be recognized as equivalent certification, as a means of ensuring adequate local resources are available in times of extreme need.

Pre-emergency preparedness models should be consistently implemented province wide by the Forest Protection Branch.

Pay Rates

The Review Team heard from stakeholders about the disparity in pay rates between career and volunteer fire fighters. The differences among various collective agreements were a complicating factor.

When firefighters from volunteer and smaller fire departments served alongside personnel from larger departments governed by collective agreements, they were paid and sometimes treated differently. This raises an issue of fairness and equity that needs to be addressed.

The Review Team Recommends:

Establish Consistent Pay Rates Province Wide

The Forest Protection Branch and the Office of the Fire Commissioner should ensure that pay rates and payment criteria for firefighting personnel are pre-established, consistent and understood by all parties.

Trained Crews

As mentioned earlier, when compared with six other North American jurisdictions, the British Columbia Forest Protection Program rated best or second best in eight of 12 performance measures according to the PricewaterhouseCoopers report of 2002. However, the PWC study indicated that most other major agencies in Canada (Alberta, Ontario and Quebec) have significantly higher budgets despite having fewer total fires and fewer interface fires annually.

Forest protection budgets are divided in two categories: a preparedness account to prepare facilities, crews, aircraft and staff, and a direct fire account which is not budgeted to any limits, but can be increased in response to the fire driven needs (in 2003, a budgeted amount of $55 million grew to actual fire suppression costs of $375 million). The major difficulty this can present is the lack of available Type 1 crews on short notice. (These crews are trained to meet the highest interagency training standards and requirements.) Although British Columbia was fortunate to access over 2400 firefighters from outside the province during Firestorm 2003, only 15 per cent of them were trained to Level 1 standards. As well, the Review Team heard numerous examples of crews being sent out without adequate local knowledge. We believe that the balance between the preparedness account and the fire account needs to be addressed.

A review of the past decade shows that Forest Protection Branch Type 1 unit crews were reduced from 27 in the early 1990s to 20 in 1999 and returned to 22 in 2001, with the addition of two unfunded crews to cover Mountain Pine Beetle killed areas. Considering the continued expansion of the pine beetle infestation and the outlook for continued hot, dry weather, this would appear to be an appropriate time to invest in an "ounce of prevention".

The Review Team Recommends:

Restore Crews

The Forest Protection Branch should restore its Type 1 unit crew complement to 27.

Getting an Early Start

On numerous occasions, the Review Team heard from experienced present and former forestry workers who questioned why, in the height of the Firestorm 2003 activities, fire crews did not get out to the site until 8:00 or 9:00 am. Veterans said it was always accepted that the most effective time for fighting the fires was between dawn and 10:00 am, before the heat of the day and the midday winds become a serious impediment to controlling the spread of the blaze. We were informed by Ministry of Forests personnel that crews were held back for safety concerns. The Ministry's own internal review suggests the need for "appropriate resources at critical times". In addition to the aforementioned Type 1 crews, the Danger Tree Assessment and Removal Process appears to have been a factor in slowing access to the fire line by crews and equipment.

The Review Team Recommends:

Eliminate Delays

As a priority, the Forest Protection Branch should review the Danger Tree Assessment and Removal Process, as well as any other sources of delay, so that fire crews can be dispatched in a safe yet efficient manner to improve fire suppression effectiveness.

The Role of Volunteers

We heard many heartwarming stories of the contributions and dedication of volunteers in the emergency efforts to cope with the 2003 BC forest fire season. As mentioned earlier, civil disasters often bring out the very best in the human spirit, and British Columbians have much to be proud of. Volunteers are indeed "the gold of this earth".

The effort was led by the many volunteer firefighters who are available throughout each year in many parts of the province to protect life and property in local districts with no permanent fire department. Many of them were called into service on an emergency basis to battle the unexpected intrusion of wildfires into their communities during Firestorm 2003.

The Review Team was struck by the fact that these volunteers not only give willingly and generously of their time and effort without compensation, but are expected to pay for the courses they take to upgrade their skills and knowledge as structural firefighters. We believe it is in the interest of municipal and regional governments to pay for the training of volunteer firefighters to ensure the most competent services are available and to address local needs on a consistent basis throughout the province.

However, aside from firefighters who are members of an established volunteer force, where a certain degree of training and experience is normally expected, the Review Team would find it difficult to recommend that a greater use of volunteers should be encouraged in wildfire settings. There is a very real risk that sending untrained and inexperienced volunteers into the midst of a major forest fire would place them in harm's way.

As was stated by the Ministry of Forests in the "Question & Answers" Appendix C of this report, "Firefighting is extremely dangerous at any time, let alone in this fire season".

A British Columbia Coroner's report on the death of a logger, who was overtaken by fire, spoke very specifically on this situation. The Coroner found that the logger's death was due to his lack of knowledge of fire behaviour and that he was physically unfit for the rigours of fire fighting.

Rather than trying to fight the wildfires, a more appropriate role for volunteers in these emergency settings would be to help deliver a whole range of social and community-based services, especially for people evacuated from their homes. These are vital programs coordinated out of the Emergency Social Services Centre set up in each affected community.

During Firestorm 2003, the registration of evacuees, allocation of materials, food and shelter authorizations, comforting, meeting and greeting, delivering evacuation notices, attending to pets and many other activities were performed competently and with great compassion by local volunteers. Search and Rescue volunteers, PEP Air volunteers and road rescue volunteers also provided valuable services.

The amateur radio operators who provided emergency communications systems when cell phone and wired systems crashed are another excellent example of the valuable contributions volunteers can and did make.

The Review Team believes that, as much as possible, volunteers should be kept "in the loop" and fully informed of policies, event status and expectations in recognition of their value as team members, and as communicators to the evacuees and clients of the Emergency Services Centre. Volunteers should be treated with the same respect and kept as well informed as all members of the emergency management staff.

The Review Team Recommends:

Pay for Volunteer Firefighter Training

Training for volunteer firefighters should be funded by municipal and regional governments.

Treat Volunteers as Equals

Volunteers must be treated as valued team members and fully informed of policies and expectations during emergency events.

First Nations Issues

Many of the actions and consequences of Firestorm 2003 impacted on First Nations communities throughout the province. In a number of cases, First Nations communities were evacuated as a result of the threat of fires in close proximity. In many other cases, fires burned areas that are part of traditional territory claimed by First Nations.

Many First Nations people worked as firefighters or emergency support workers. As a result, their leaders and spokespersons had observations and concerns they shared with the Review Team.

The Review Team met with the Nlaka'pamux Nation Tribal Council in Lytton, consisting of eight First Nation communities, and the Tsilhqot'in National Government,

consisting of six First Nations communities in Williams Lake. We also heard presentations from Chief Rick LeBourdais of the Whispering Pines Indian Band in Kamloops, and Ray Warden and Michael Keefer of the Ktunaxa Kinbasket Treaty Council in Cranbrook.

First Nations leaders emphasized that their traditional way of life has always taught them to live in harmony with the forest. As well, they recognized that forest renewal through natural cycles of fire had always been part of their teachings. Presenters expressed their support for the Ministry of Forests to employ a variety of measures aimed at reducing fuel loading and restoring forest health.

A consistent theme of discussions by First Nations representatives was an apparent lack of commitment from the Ministry of Forests to fully utilize First Nations people in the annual forest fire fighting efforts. Some presenters indicated that there were trained and experienced firefighters with S100 certification in their communities who were not employed this past summer despite the fact that some three million person hours of time was spent fighting the fires.

We are aware that in other provinces, First Nations people are the primary seasonal workforce for the forest fire fighting effort. In many cases, they live in close proximity to the site of potential fires and can be quickly mobilized for the effort.

In other presentations, we were informed about the requirements for thinning forests by removal of small-diameter trees, underbrush and other fuel from the forest floor to restore the forests to good health and lower the risk of wildfires through fuel load reduction. This is a costly and labour-intensive process.

Both forest firefighting and fuel load reduction provide employment opportunities that can be offered to First Nations residents. The First Nations leaders expressed the desire to have greater opportunities for their people to participate in forest fire fighting and fuel load reducing projects.

The Review Team Recommends:

Involve First Nations

The Ministry of Forests should explore ways to enhance the participation of First Nations in forest fire fighting and fuel load reduction activities.

Maps

During the course of the public consultations, the Review Team heard commentary about the availability and adequacy of basic maps. Presenters suggested that at times, current maps were not available at all, and that some maps contained outdated or incomplete information and wrong geographic names.

During events such as Firestorm 2003, when large numbers of firefighters from outside the region are involved, complete and accurate maps are essential. Many fire fighters lacked any local knowledge of geography, terrain or man-made features such as logging roads. The availability of accurate maps is vital in preparing the fire crews and allowing them to move people and equipment safely in the fire zone.

The Review Team heard examples of different teams utilizing maps with different bases because of personal preferences. It was suggested that efforts be made to ensure standardization in the maps used by all agencies involved in fire fighting in British Columbia, particularly when crews from outside the region or outside the province are involved.

A significant mapping initiative is currently underway within the provincial government. The initiative is aimed at providing modern and current base information that is updated regularly and will be available electronically in the future.

The Review Team Recommends:

Provide Better Maps

The Ministry of Sustainable Resource Management should accelerate the completion of the major mapping initiative currently being undertaken to ensure it is available for use in future fire seasons.

Structural Sprinklers

The Review Team heard a number of presentations about the effectiveness of sprinklers on structural fires. In particular, we were told of the application of sprinklers by Ontario Ministry of Natural Resources staff in the southeast part of British Columbia, where they were credited with saving 30 or 40 structures.

A presentation from the Forest Engineering Research Institute of Canada showed that if a structure had a fire resistant roof and sprinklers to reduce the ambient temperature of the building, it did not burn in the midst of a wildfire.

The Review Team Recommends:

Utilize Sprinklers

Communities and homeowners in the interface should be encouraged to invest in methods of self-protection such as sprinklers as soon as possible.

Responding to Interface Fires ~ Financial Accountability

Throughout the public consultation process, the Review Team heard many comments about how money was spent and financial resources were allocated. Some were positive but many questioned the economy of specific decisions and the resulting overall cost of the response to Firestorm 2003.

The Review Team's mandate and reporting timelines did not allow for a financial audit. However, we have been able to make some observations and recommendations based on public and stakeholder comments, and what has been said in previous wildfire reports.

Balancing the principles of financial administration with emergency response involving human life and public safety is a delicate task. No one would accept that bureaucratic red tape or cost controls should interfere with proper emergency responses. At the same time, British Columbians would agree that financial accountability must be maintained.

The Review Team heard comments about the cost of the response to the wildfires as it related to the use of contractors, air support and the wages paid to some responders. Several comments were also made about procedures and processes followed during the fire response and resulting evacuations, the lack of the proper paperwork and the timeliness of payments.

On many issues there was no consensus. For example, some told the Review Team that the use of the Martin Mars water bombers at $33,000 per hour was not cost effective given they could only fly over the fire area for two hours before having to make a one-hour flight back to Port Alberni on Vancouver Island to refuel. Yet, there were others who wanted to know why there was not greater use of the Martin Mars.

Some presenters wanted to know why greater numbers of helicopters and water bombers were not utilized, while still others commented on the apparent lack of fiscal accountability demonstrated by the "air show" being staged courtesy of the Ministry of Forests.

Others expressed concern about what they viewed to be the excessive and inappropriate use of contractors and personnel while, conversely, some questioned why, in their own particular circumstance, more help was not provided. Some asked why they or their colleagues did not have an opportunity to be employed.

On other issues such as the availability of forms, proper documentation, timeliness of payments and inconsistent rates of pay from agency to agency, there was more unanimity. A number of comments were made about both the inconsistency and lack of forms and documentation from agency to agency and place to place.

Shortcomings in paperwork may seem minor in view of the greater challenges, but proper documentation

and consistency is fundamental to achieving good fiscal management and accountability. The comment was made that if you can't get these kinds of detailed issues right, how much confidence can you have about the bigger picture?

Some of these issues concern specific tactical decisions made in the midst of battle, while others are about government policy and process. The Review Team is not in a position to second-guess tactical decisions made on the front lines as the firestorm threatened homes, communities and human life. Rather, our observations and recommendations are focused on improvements to policies and procedures.

Common sense dictates that the best time to look at financial controls is not at the height of a crisis but in the off-season. Fine-tuning systems to ensure fiscal accountability and fairness prior to the next emergency is time well spent. Often the success of the response will be judged in part on the effectiveness of those systems. The period immediately after a major event offers the best opportunity to reflect on how well those systems work and where improvements can be made.

The Review Team does not advocate big changes to existing financial control and accountability systems in the British Columbia public sector, but recommends sensible continuous improvement. To that end, it is useful to note the conclusion drawn in the PricewaterhouseCoopers report of December 2002, regarding fire-fighting costs in the Ministry of Forests Forest Protection Program.

This independent report concludes: "BC's firefighting costs are comparable to other jurisdictions."

Prior to Firestorm 2003 the Provincial Emergency Program had already made significant advances to enhance its operational efficiency and accountability. These improvements included:

- the adoption of the British Columbia Emergency Response Management System;
- the establishment of Provincial Regional Emergency Operations Centers in each region; and
- the adoption of an integrated response model in 1999.

However, following good business practice, all groups preparing for emergency response - whether fire, flood,

Daily Maximums

- **Number of new fires 218 (763 fires over 6 days)**
- **880 fires burning**
- **7,668 firefighters**
- **1,211 pieces of heavy equipment**
- **$9 million**

earthquake or other hazard - must continually examine their processes and procedures to ensure the highest level of operational efficiency while at the same time maintaining fiscal accountability and transparency. This point is significant given the level and speed at which spending can occur in responding to major events such as those in the summer of 2003. Simple, well-understood and respected systems are fundamental to achieving effective financial accountability. Payroll is a one of those systems. Several comments from people in the consultation process indicate that time should be spent reviewing matters such as pay rates and structures for emergency workers to ensure they are agreed upon, understood and fair.

The differential treatment of career and volunteer firefighters, as well as contractors, became an issue at times during the summer of 2003. In addition, the Review Team heard comments relating to fairness and consistency in hiring and contracting procedures both between and within organizations. These issues are covered in more detail in the previous section on resources.

Just as many organizations involved in the 2003 Firestorm conducted their own operational reviews and debriefings in order to judge their performance, the same should be done for financial administration and fiscal accountability. An opportunity exists after every emergency event to perform audits on a sampling of procedures and expenditures to examine how spending was documented, how contracting and hiring practices were followed, and how support was administered.

The Review Team Recommends:

Maintain Financial Accountability of Wildfire Response System

Following each major fire season, the provincial government should undertake a program of audits to examine, from a value-for-money perspective, the effectiveness and economy of the financial administration systems used by the Provincial Emergency Program, The Office of the Fire Commissioner, and the Ministry of Forests, Forest Protection Branch.

It is important to recognize that audits should be conducted with a view to improving the overall financial administration of an organization or program, rather than finding fault or placing blame. The result should allow for the best balance of accountability and transparency in the expenditure of government funds, while protecting life and safety remains the prime objective.

Recovering from Interface Fires ~ Post-Emergency Recovery

All well-developed emergency plans contain a post-emergency recovery component. This component should deal with the physical and social consequences of the emergency, in this case interface wildfires.

In visiting the affected communities, the Review Team observed and received positive indications of the work being done to restore the physical damage caused by Firestorm 2003. However, there is a need to restore the impacted areas to prevent subsequent problems of floods, landslides and other topographical hazards resulting from the destruction of vegetation.

The assistance and the manner in which it came forward varied from community to community. The fire insurance industry responded by establishing emergency claim centres for those who were insured. The public responded with a huge outpouring of funding for victim relief, while neighbours helped neighbours get re-established.

Non-government agencies such as the Canadian Red Cross and the Mennonite Disaster Service, which made presentations to the Review Team, came forward to address the needs of those people with few resources left after the wildfires. There was a strong understanding throughout the province and the country that many communities had been suddenly disadvantaged and needed assistance.

However, with many non-profit agencies governed by different mandates, there can be a problem in the post-emergency recovery period of more than one organization providing assistance to the same individuals. This overlap and duplication could be overcome by the establishment of an umbrella committee with a designated lead agency responsible for collecting donations and allocating awards.

Suggestions were made to establish a provincial template in every local emergency plan that will address the many actions needed to achieve comprehensive recovery from a disaster. The template should be used by all communities, municipalities and regional districts.

Ideally, in each community, the template would include a broadly structured Recovery Committee composed of representatives from local government, volunteer and funding agencies, Provincial Emergency Program personnel, local clergy and affected residents.

Bringing together all social support agencies, both public and private, under one organizing group would help ensure those with unique needs do not fall between the cracks.

The Review Team Recommends:

Prepare the Recovery Plan Before the Emergency

Every emergency management plan should include a recovery committee composed of representatives from local government, volunteer and funding agencies, the Provincial Emergency Program, local clergy and affected residents.

For each natural disaster, a provincial "umbrella" committee with a designated lead agency should be established for the purpose of collecting donations and allocating awards.

Address Watershed Erosion and Flooding Concerns

In the aftermath of Firestorm 2003, there are many ways in which the landscape has been altered. The Review Team received an excellent presentation from the Association of Professional Engineers and Geoscientists of British Columbia that identified the damage to watersheds in the areas around interface developments.

The burning off of vegetation and absorptive material leaves a coat of impervious material, in many cases loosely held together by damaged roots. As a consequence, under heavy rainfall or runoff conditions, the moisture will not be absorbed, but will run overland in a much more accelerated fashion. This can lead to flooding as the water overflows drainage channels and exceeds culvert capacity, eroding roadbeds or even causing mudslides.

On October 22 and 23, after the 2003 wildfires, such conditions were experienced near Kelowna. Mayor Walter Gray of Kelowna told the Review Team about *"the difficulty experienced by people who recently suffered from the flash flood and debris flow in Kelowna. The debris flow occurred in a one-in-200-year storm event, which was exacerbated by the wildfires leaving the slopes hydrophobic and void of grasses, brushes and trees to absorb the rainfall."*

It will be many years before the absorptive capacity of the landscape is returned to normal. Many areas will remain at risk without rehabilitative measures. The most significant concern for residents who face the risk of water or mudslide damage is that they are likely uninsurable. Another area of grave concern is the potential damage to fish habitat and drinking water sources related to the destruction of streamside vegetation.

The Review Team Recommends:

Deal With Watershed Restoration

The provincial government, in partnership with local governments, should examine watershed restoration as soon as possible, to identify the areas of severe watershed destruction and develop a plan for the protection and rehabilitation of these areas.

Clarify Federal Disaster Relief Funding

There has been a very rapid and generous response from the federal government to the 2003 interface fires in British Columbia, with visits from the Prime Minister, cabinet ministers and senior officials throughout the critical period of the forest fires, and advance payments for disaster relief through the Disaster Financial Assistance Arrangements (DFAA). However, many questions remain about the extent of the damages that will be covered, and the eligibility for many of the losses suffered by residents.

For instance, forest fires per se are not covered by DFAA, whereas interface fires that impact on urban infrastructure can attract support. In the past decade, the federal role and level of compensation has been broadened in a series of public disasters such as the 1987 Edmonton tornado, the 1996 Saguenay River floods in Quebec, the 1997 Red River flood in Manitoba, and the 1998 ice storm in eastern Canada. Nevertheless, there remain many inconsistencies in the way post-disaster reimbursement decisions are made.

There continue to be gaps and anomalies that certainly will impact the compensation to British Columbia for losses caused by Firestorm 2003. For example, Interior ranchers were concerned about lack of compensation for fencing destroyed by the fires on Crown leases. DFAA guidelines will cover costs of replacement for damaged equipment and facilities, while not covering the costs of prevention of damage.

The Review Team Recommends:

Engage Federal Government in Funding Fire Prevention

In the short term, the federal government should examine the possibility of developing a program on a cost-shared basis with provincial and local governments that invests in the fireproofing of interface communities. This investment in prevention will undoubtedly result in a reduction in future damage costs under the Disaster Financial Assistance Arrangements.

Summary of Recommendations

The Firestorm 2003 Provincial Review Team's recommendations are meant to strengthen and build upon existing efforts, and are complementary to and supportive of the many suggestions coming out of other internal operational reviews conducted by the Forest Protection Branch and the Office of the Fire Commissioner.

The fact that some of the actions we recommend are in some part already underway attests to the effectiveness of British Columbia's emergency response system and its capacity to deal with change. Even so, many activities would benefit by being accelerated and more broadly applied. In other cases, we have suggested new approaches to build on the strength that already exists in the province.

Some of the Review Team's recommendations can be acted upon and implemented quickly. Other recommendations that we have put forth will require additional time and analysis. But at the end of day, they too should be implemented with as much urgency as possible.

Collectively, our recommendations are intended to ensure that all communities in the province are better prepared to deal with interface fires beginning with this year's upcoming fire season.

Forest Management

Province to Lead Strategic Plan Development

The provincial government should lead the development of a strategic plan in cooperation with local governments to improve fire prevention in the interface through fuel management. The plan should:

- **Focus on identification of those areas of the province where communities, infrastructure, and watersheds have the greatest potential to be impacted by large-scale fires.**
- **Identify and assign fuel management priorities based on threats to human life, property and resource values.**
- **Require a community protection plan in those communities with a high probability and consequence of fire in the interface zone.**
- **Be cost shared with local governments.**
- **Give priority for funding, fire management planning, fuels mitigation, and protection to these areas.**

Undertake Fuel Treatment Pilot Projects

The provincial government should undertake a series of fuel treatment pilot projects in cooperation with municipal and regional governments in locations of

high interface fire risk to demonstrate and prove the social, economic, and ecological costs and benefits of fuel treatments.

The provincial government should commit new funding for its share of the fuel management program.

Adopt FireSmart

Municipalities within fire prone areas should formally adopt the FireSmart (Partners in Protection 2003) standard for community protection both for private and public property.

At a minimum, this standard should be applied to all new subdivision developments.

Look at Insurance Rates

The insurance industry should encourage and reward, through its rate-setting process, dwellings and communities built to acceptable standards.

Assess Land Use Plans

The province should review and amend Land Use Plans and LRMPs to incorporate fire management considerations. Fire experts must be available to influence and participate in land management planning.

Reduce Fuel Buildup in Parks

The province should allow selective tree harvesting in provincial parks to reduce fuel buildup.

Ministry of Forests Responsible for Fire Suppression in Parks

The Ministry of Forests, Forest Protection Branch should take the lead in suppressing fires in provincial parks, as proposed under the new Wildfire Act.

Use Prescribed Burning

The province should establish strictly controlled conditions for using prescribed burning as a fuel management tool.

Deal With Slash

The province should require all slash within or adjacent to a wildland urban interface to be removed, treated or burned on site to mitigate the surface fuel hazard.

Consider Amending the Annual Allowable Cut

The Ministry of Forests should consider amending Annual Allowable Cut determinations in fire-prone ecosystems to encourage hazard reduction treatments by tenure holders in marginal and uneconomic tree stand areas within the wildland urban interface.

Look at Alternatives to Stumpage

The province should investigate alternatives to stumpage as an incentive to encourage the harvest of high-risk low value fuel types.

More Research and Development

Industry should undertake research into the use of small diameter trees in non-traditional forest products markets such as energy and bio-fuel.

Retain The Knowledge Base

The province and the forest industry must pay particular attention to retaining the existing knowledge about fuel reduction practices and continue to develop and expand that knowledge base.

Share Information

Wherever possible, British Columbia should focus on collaboration with North American and other jurisdictions to share knowledge and pursue research.

Emergency Management

Require Wildfire-Proofing Across the Province

The British Columbia government should require municipal and regional governments to implement building codes and land use requirements that have proven useful elsewhere in limiting the impact of interface fires.

Make Local Emergency Plans Mandatory

As is the case for municipal governments, regional districts should be required through legislation to provide local emergency plans developed to a provincial standard and maintained to a current status.

- Local plans should be based on the British Columbia Emergency Response Management System (BCERMS).
- Plans should be in a standardized format/template consistent across the province, and be made consistent with provincial plans.
- Plans should be developed from an "all hazards" perspective.
- Plans must be practical, comprehensive and updated annually.
- Plans must include mandatory mutual aid agreements among municipal and regional districts.
- Plans must incorporate clear obligations and personal responsibilities of residents living in interface fire hazard areas.
- Ideally, plans should include First Nations involvement.
- Plans must have a communications element that incorporates local media into the disaster response effort.

Maximize British Columbia's Firefighting Expertise

Provincial and local governments should ensure both forest firefighters and structural firefighters are cross trained in each other's area of competence.

The province should establish a working group of officials from a broad spectrum of interface fire responder agencies, fire training agencies, fire prevention agencies, persons with firefighting expertise, and other appropriate members to examine best practices relating to interface fires and recommend changes to government.

Adopt Automatic Aid

The province should adopt the principle of automatic aid to ensure that emergency services can be delivered in all areas of the province under the mandatory emergency plans.

Command and Control

Standardize BCERMS and ICS Use and Training

To gain the full value of BCERMS and the Incident Command System (ICS) it must be universally adopted by all provincial and local government agencies.

Training course material, delivery and examination for ICS should be standardized across organizations.

The province should consider the establishment of a single, province-wide focus for training within British Columbia to achieve:

- Implementation of consistent standards and policies for the Office of the Fire Commissioner, Ministry of Forests, and the Provincial Emergency Program to allow integration from within the province's emergency response structure.

- Development and continual upgrading of a common curriculum for all ICS training in British Columbia.

Continuing Education

Maintaining ICS accreditation over time should be dependent on a system of continuing education credits and participation in regularly-scheduled, integrated simulations using ICS.

Communications

Develop a Crisis Communications Strategy

The province should immediately undertake the development of a provincial communications strategy and protocol for major emergency events defining the roles and responsibilities of those involved. The strategy should:

- Include the participation of all key stakeholders including the media.
- Establish clear principles and protocols about the release of information.
- Identify how the media and the internet can be used in times of emergency as a technical resource and to disseminate information to the public.

Establish Emergency Communications SWAT Team

To coordinate on-site communications during times of emergency, the province should establish a media communications SWAT team with members from municipal, regional, provincial and federal governments and including other major stakeholders as appropriate.

The members of this team would be trained in crisis communications and would serve to facilitate, not stem, the flow of information.

Cooperate on Training

All jurisdictions should consider intensifying inter-agency training efforts, including the use of large-scale interface wildfire simulations, to improve communications.

Achieve Emergency Radio Inter-Operability

The British Columbia government should develop and implement a provincial strategy for emergency communications technology focused on moving over time to total inter-operability across agencies throughout the province.

Initial activities should include developing a provincial inventory for all fire, police, ambulance, forestry radios and frequencies to ensure that where radio systems are compatible, they can be programmed with common frequencies or talk groups.

Whenever portable and mobile radios for emergency services are replaced to accommodate narrow banding, they should be replaced with new radios that are inter-operable across agencies.

Include Amateur Radio Operators in Emergency Response

All Emergency Operation Centres should include a provision for amateur radio operators, including power and antenna space, in case they are needed.

Communications systems should be regularly exercised to ensure that equipment, policies and procedures are functional.

Educate the Public about Interface Wildfires

A cooperative public education program should be undertaken, building on material already available in various British Columbia government departments and agencies, as well as from external sources.

This education campaign must inform interface residents about the risks and their responsibilities in planning and preparing for and responding to interface fires.

The campaign should be delivered to school children as well as adults.

Municipal and regional governments should regularly distribute educational materials to interface residents.

Insurance agents should distribute educational materials with each policy renewal of an interface dwelling.

Evacuation

Allow More Local Decision Making on Evacuations

The requirements for issuance and lifting of evacuation orders should be reviewed by the provincial government to ensure that decisions can be made by those people with the best information, closest to the action, who are competent to do so. Decisions should not always be dependent on the Office of the Fire Commissioner in Victoria.

Increase Understanding of the Evacuation Process

The province should target greater resources at ensuring better awareness by the public about the stages of evacuation, including the procedures to be followed during an evacuation and after the lifting of an evacuation order, particularly in areas of high interface fire risk.

The procedures and powers of the police should be clarified and the permit re-entry process standardized so that all affected responders, evacuees, media and others understand the process, its logic and the location of the permit issuing authority.

Simplify Access to Post-Evacuation Assistance

The appropriate agencies should streamline and simplify registration processes and procedures, making it easier for wildfire evacuees to obtain the basic necessities of life during an already stressful time.

Resources

Implement Firefighting Equipment Database

The Office of the Fire Commissioner should implement a searchable database to maintain a current and accurate province-wide inventory of private and public sector equipment available for fire response.

Access Local Firefighting Expertise

The Ministry of Forests, Forest Protection Branch should implement a modern records management system to maintain a current and accurate province-wide inventory of certified forest firefighters available for fire response at the local level.

The Forest Protection Branch should consider some mechanism, other than retaking the S100, that allows past experience in the forest industry or fire fighting to be recognized as equivalent certification, as a means of ensuring adequate local resources are available in times of extreme need.

Pre-emergency preparedness models should be consistently implemented province wide by the Forest Protection Branch.

Establish Consistent Pay Rates Province Wide

The Forest Protection Branch and the Office of the Fire Commissioner should ensure that pay rates and payment criteria for firefighting personnel are pre-established, consistent and understood by all parties.

Restore Crews

The Forest Protection Branch should restore its Type 1 unit crew complement to 27.

Eliminate Delays

As a priority, The Forest Protection Branch should review the Danger Tree Assessment and Removal Process, as well as any other sources of delay, so that fire crews can be dispatched in a safe yet efficient manner to improve fire suppression effectiveness.

Pay for Volunteer Firefighter Training

Training for volunteer firefighters should be funded by municipal and regional governments.

Treat Volunteers as Equals

Volunteers must be treated as valued team members and fully informed of policies and expectations during emergency events.

Involve First Nations

The Ministry of Forests should explore ways to enhance the participation of First Nations in forest fire fighting and fuel load reduction activities.

Provide Better Maps

The Ministry of Sustainable Resource Management should accelerate the completion of the major mapping initiative currently being undertaken to ensure it is available for use in future fire seasons.

Utilize Sprinklers

Communities and homeowners in the interface should be encouraged to invest in methods of self-protection such as sprinklers as soon as possible.

Financial Accountability

Maintain Financial Accountability of Wildfire Response System

Following each major fire season, the provincial government should undertake a program of audits to examine, from a value-for-money perspective, the effectiveness and economy of the financial administration systems used by the Provincial Emergency Program, The Office of the Fire Commissioner, and the Ministry of Forests, Forest Protection Branch.

Post-Emergency Recovery

Prepare the Recovery Plan Before the Emergency

Every emergency management plan should include a recovery committee composed of representatives from local government, volunteer and funding agencies, the Provincial Emergency Program, local clergy and affected residents.

For each natural disaster, a provincial "umbrella" committee with a designated lead agency should be established for the purpose of collecting donations and allocating awards.

Deal With Watershed Restoration

The provincial government, in partnership with local governments, should examine watershed restoration as soon as possible, to identify the areas of severe watershed destruction and develop a plan for the protection and rehabilitation of these areas.

Engage Federal Government in Funding Fire Prevention

In the short term, the federal government should examine the possibility of developing a program on a cost-shared basis with provincial and local governments that invests in the fireproofing of interface communities. This investment in prevention will undoubtedly result in a reduction in future damage costs under the Disaster Financial Assistance Arrangements.

Final Thoughts

During the past four-and-a-half months, the Review Team has listened to and learned a great deal about the fire-related challenges that face British Columbians, particularly those in the interface zones. On many of the matters addressed, both at our public hearings and in the written briefs we received, there was no clear consensus. This was especially true regarding individual assessments of how operations were carried out during the stress of last summer's emergency.

On some issues, however, there was strong and wide spread consensus. Almost everyone believed that many aspects of planning, preparation, response and recovery could be improved.

Another area of clear consensus was that concentration of resources and effort on issues that anticipate, prevent and prepare for disasters is a better investment than on expenditures made in coping with disasters. Consequently, we have made many recommendations to invest in preparedness, education and training.

There was also a firm recognition that many subdivisions in the interface were not designed to mitigate wildfire risks, nor were the dwellings constructed to reduce wildfire hazards. We believe that local governments and individual homeowners have recognized the risks and are now prepared to follow the best information available to correct for past inaction. We believe they will accept strong direction and leadership on this issue.

The topic of fuel load reduction through prescribed burns is perhaps the best example of a strong consensus on what formerly had been a very controversial and divisive debate. Simply put, almost everyone who gave advice to the Review Team agreed that it was better to accept short-term inconvenience and irritation in favour of long-term reduction in hazard and cost.

We believe that governments have a once-in-a-lifetime opportunity to implement risk reduction policies and legislation while the devastation of Firestorm 2003 is fresh in the public's mind and the costs and consequences of various choices are well understood.

Although this winter has brought some precipitation, Interior snow packs are still below normal, and many scientific bodies are predicting a trend towards hotter, drier conditions. The hot, dry conditions that British Columbia endured last summer and in recent years also appeared in California, Europe and elsewhere.

In Europe, for instance, where tens of thousands of deaths last summer were attributed to a searing heat wave, the Swiss Federal Institute of Technology, ETH Zurich, is predicting a growing trend to more hot weather. According to Dr. Christoph Schar, "our simulations show that, roughly speaking, every second European summer is likely to be as warm, if not warmer, than the summer of 2003."

From a Canadian perspective, moisture cycles usually follow a seven to ten year pattern and we appear to be only a few years into a dry cycle.

Whether the reason is global climate change, or normal weather cycles, it would be prudent for British Columbians to prepare for the probability of more hot, dry summer weather.

The time to prepare is now. The responsibility for action is shared among all levels of government and private individuals. We believe British Columbians are up to the challenge.

APPENDIX A

Dates and Locations of Public Consultations

Public meetings were advertised and held in the following communities:

- Barriere, November 12th, 2003
- Kamloops, November 13th, 2003
- Osoyoos, November 24th, 2003
- Penticton, November 25th, 2003
- Kelowna, November 26th & 27th, 2003
- Chase, November 28th, 2003
- Cranbrook, December 1st, 2003
- Nelson, December 2nd, 2003

APPENDIX B

List of Presenters

Following are the communities in which public meetings took place and the names of people that made oral presentations at those meetings, in chronological order. The transcripts of these presentations have been placed on the Firestorm web site at www.2003firestorm.gov.bc.ca.

Barriere, November 12th, 2003

- Al Kirkwood,
  Barriere Fire Chief
- Tim Hockey,
  Barriere Fire Marshall
- Barry McLean
- Denein Stanley
- Horst Braun
- Randy Hedlund
- Glenda Ritchie
- Desmond Rice
- Susan Garland
- Bob Rutten
- John McAllister
- Wim Houben
- Tim Hoffman
- Gary Chivers
- Horst Braun (again)
- Ruth Black
- Walt McKirdy
- Norm Fennell
- Lori Barsi
- Gary Chivers (again)
- John McAllister (again)
- Gary Symons, CBC Radio
- Keith Willis
- Sandra Jailet

Kamloops, November 13th, 2003

- John Ranta,
  Thompson Nicola Regional District
- Mel Rothenburger,
  Mayor of Kamloops
- Bob Boswell,
  British Columbia Wildlife Federation
- Tony Toth,
  British Columbia Wildlife Federation
- Andy Pezderic,
  British Columbia Wildlife Federation
- Phil Hallinan,
  British Columbia Wildlife Federation
- Jim McComb
- Chief Rick LeBourdais,
  Whispering Pines Indian Band
- Andy Kormendy,
  Mayor of Ashcroft
- Tony Brumell

- Gordon Chow
- Marvin Gonvick
- Al Gomaco,
  Deputy Fire Chief of McLure
- Rick Sommer,
  Tolko Industries Ltd.
- Peter M. Mahaits
- Ruth Madsen,
  Thomson Institute of Environmental Studies
- Tim Broere
- Ella Brown,
  Mayor of Logan Lake
- Marlon Dosch,
  District of Logan Lake
- Ruth Madsen (again)

Osoyoos, November 24th, 2003

- John Slater,
  Mayor of Osoyoos
- Garth Kunz
- Doug MacLeod
- Joe Simose
- Ken Erickson

Penticton, November 25th, 2003

- Walter Despot,
  Mayor of Keremeos
- Terence Condon
- Doug Pichette
- Lloyd Miskiman
- Chris Pond
- Gray Barkwill
- Catherine McDougall
- Morrie Thomas
- Tom Chapman
- Mitch Black,
  Assistant Fire Chief of Naramata
- Neil Campbell,
  Fire Warden of Naramata
- Phil Lawton
- Graham Baker,
  Fire Chief of Naramata
- David Perry,
  Mayor of Penticton
- Dan Donohoe
- Debra Silk,
  Emergency Domestic Animal Services
- Dan Ashton,
  Chair of Regional District of
  Okanagan-Similkameen
- Bob Gibbard
- Warren Lee
- Maggie Lovelock
- Bob Richards

Kelowna, November 26th, 2003

- Mike Jacobs,
  Urban Development Institute
- Graham Wood,
  Urban Development Institute
- Ken Winn
- Milton Wilson
- John Woodworth
- Bill Cameron
- Samantha Johnson
- Beryl Itani,
  Emergency Social Services
- Ross Gorman
- Frank Hilliard
- Walter Gray,
  Mayor of Kelowna
- Robert Hobson,
  Regional District of the Central Okanagan
- Ron Mattiussi,
  City of Kelowna
- Gerry Zimmerman,
  Fire Chief of Kelowna
- Dick Fletcher,
  Association of Professional Engineers & Geoscientists
  of British Columbia
- Don Dobson,
  Association of Professional Engineers & Geoscientists
  of British Columbia
- Tim Smith,
  Association of Professional Engineers & Geoscientists
  of British Columbia
- Joe Gordon
- David Sumner,
  Flame Out Corporation
- Peter Dill

Kelowna, November 27th, 2003

- Sean Tracey,
  National Fire Protection Agency
- Paul MacNamara
- Dr. George Scotter
- Louis Thibodeau
- Peter Campbell
- Geoffrey Paynter
- Doreen Kaiser
- Dale Middlemiss
- Chris Turton
- George Heyman,
  British Columbia Government & Service
  Employees' Union
- Glen Maddess,
  Maddess Consulting Services
- Jennifer Banerjee
- Phil Hallinan,
  British Columbia Wildlife Federation
- Tony Toth,
  British Columbia Wildlife Federation

- Marsha Lederman,
  Canadian Broadcasting Corporation
- Gary Symons,
  Canadian Broadcasting Corporation
- Chris Blann
- Ann Ferguson,
  Interior Health Authority
- Paddy Hall
- Mel Gauthier
- Dave & Chuck Ross
- Dean Ferrer
- Terry Prechel
- Rusty Ensign
- Sharon Shepherd,
  Councillor, City of Kelowna
- Kim Stinson

Chase, November 28th, 2003

- Marilyn Ivey
- Ted Bacigalupo,
  Director of the Regional District of Columbia-Shuswap
- Bruce Newton
- Glenn Lawson,
  Member of the Pritchard Fire Department
- Linda Echlin
- Bob Gibbs
- Rene Talbot,
  Director, Columbia-Shuswap Regional District
- Vi Dubyna
- Jim Newhart
- "Snag Faller"
- Bruce Newton (again)
- Gerry MacDougall
- "Snag Faller" (again)
- Joanne & Pete Senechal
- John Pelcher
- Michael De Leeuw

Cranbrook, December 1st, 2003

- Susan Bond,
  Kimberley Nature Park Society
- Peter Davidson,
  Ministry of Water, Land & Air Protection
- Bill Bennett,
  MLA, East Kootenay
- Gundula Brigl,
  Regional District of East Kootenay
- Ken Gauthier,
  Tembec Industries Ltd.
- Larry Hall
- Maurice Hansen,
  Rocky Mountain Trench Society
- Carmen Purdy,
  Kootenay Wildlife Heritage Fund
- Lisa Mose,
  Caddis Consulting

- Ray Warden,
  Ktunaxa Kinbasket Treaty Council
- Michael Keefer,
  Ktunaxa Kinbasket Treaty Council
- Bill Swan
- Lee-Ann Crane,
  Regional District of East Kootenay
- Loree Duczek,
  Regional District of East Kootenay
- Faye Street,
  Kootenay Livestock Association
- Sheldon Reed
- Mike Pierce
- Rob Gay
- Joan Bray
- Ken Bridge

Nelson, December 2nd, 2003

- Glenda Patterson,
  Cathedral Lakes Lodge
- Randy Brieter,
  Acting Fire Chief of Nelson
- Jim Lambrick, Kootrac
- Karie Garnier,
  "Out of the Ashes" documentary
- Milt Goddard
- Tom Brach,
  Fire Protection Emergency Services Coordinator for
  Regional District of Central Kootenay
- Simon Grypma,
  Assistant Fire Chief of Naramata
- Richard Drew
- Gordon Zaitsoff,
  Regional District of Central Kootenay
- Dermot Hikisch, Firefighter
- Anne Sherrod,
  Valhalla Wilderness Society
- Roger Oliver
- Don Mortimer,
  FireLine Consulting
- Bob Rutherglen
- Alan With
- Bob Rutherglen (again)

The Review Team also met with the following:

Lytton, November 14th, 2003

- Chris O'Connor,
  Mayor of Lytton
- Nlaka'pamux Nation Tribal Council

Vancouver, December 8th, 2003

- Paul Kluckner,
  Environment Canada
- Archie MacDonald,
  Council of Forest Industries
- Gary Crooks,
  Vice President, Kelowna, Council of Forest Industries
- Alex Sinclair,
  FERIC
- Bowie Keefer,
  Galiano Island Pilot Project
- Lindsay Olson,
  Insurance Bureau of Canada
- Paul Kovacs,
  Institute for Catastrophic Loss Reduction

Vancouver, December 9th, 2003

- Peter Anderson,
  Simon Fraser University
- Mark McCooey,
  SEI Industries Ltd.
- Gary Wilson,
  SEI Industries Ltd.
- Aaron Tweedy,
  SEI Industries Ltd.
- Blair Suffredine,
  MLA, Nelson-Creston
- Ian Pike,
  Canadian Red Cross
- Kimberley Nemrava,
  Canadian Red Cross
- Wally McCulloch,
  Fire-Trol
- Ron Bradley,
  Fire-Trol
- Barry Marsden,
  Conair Group
- Rick Pedersen,
  Conair Group
- Tony Quo Vadis,
  Conair Group
- John Phillips,
  Timberwest
- Terry Dixon,
  Flying Tankers
- Doug McLeod,
  BC Hydro

Vancouver, December 10th, 2003

- Ardath Paxton Mann,
  Western Economic Diversification,
  Government of Canada
- Ken Armour,
  Western Economic Diversification,
  Government of Canada
- Waldo Neufeld,
  Chair, Mennonite Disaster Services of BC
- Fred Kathler,
  Mennonite Disaster Services of BC
- Frank Friesen,
  Mennonite Disaster Services of BC

- Chris O'Connor,
  Mayor of Lytton
- Tom Dall,
  Administrator, Village of Lytton
- Sgt. Don Bindon,
  Emergency Operations Program Manager,
  RCMP "E" Division
- Inspector Perry Edwards,
  RCMP
- Richard Finley,
  Fire Chief, View Royal Fire Rescue Department
- John Betts,
  Executive Director, Western Silvicultural
  Contractors' Association
- Bruce Blackwell,
  B.A. Blackwell & Associates

Williams Lake, Dec. 11th, 2003

- Ervin Charleyboy,
  Chief, Tsilhqot'in National Government

Vancouver, January 15, 2004

- Mayor Douglas Miller,
  Village of Lions Bay

Following are names of people, in alphabetical order, who made written submissions to the Firestorm Review Team.

- Don Agnew
- Charlie Andrew,
  Adams Lake Indian Band
- Richard Armour
- Lyle Attfield
- Constance Bachmann
- Richard Baravalle
- Donna Barnett,
  Mayor of 100 Mile House
- S. Barr
- Ken Barry
- Wes Barton
- Rowena Bastien,
  Cariboo Regional District
- Irene Battison
- Rod Bealing,
  Private Forest Landowners Association
- Al Beaver
- G.L. Benwell
- Don Billard
- Kathryn Bindon,
  Okanagan University College
- Paul Birzins,
  Okanagan Nation Alliance
- Tom Blom
- Suan Booiman
- Joan Bristow
- David Bromley

- Vince Brotherston
- Ed Brouwer,
  Canwest Fire
- Gordon Brown
- Jackie Brown
- Lynn Bryden
- Phil Burton
- Carey Cameron,
  SafetyBoss
- R.C. Campbell
- Wayne Carson
- Lorna Chalmers,
  District of Logan Lake
- Mary & Paul Chappie
- Yvon Chasse
- Walter Cibulka
- Bryan Collier
- M. Paul Cook
- Les Cooke
- Jim Cooperman,
  Shuswap Environmental Action Society
- Eric Craig
- Paul Crober
- Jack Dabney
- Dr. William Daily,
  Phoenix, Arizona
- Glen Deacoff
- Hans Dekkers
- Bruno Delesalle,
  Grasslands Conservation Council of BC
- Jasmine DeMarcos, Canadian Red Cross
- Fes DeScally
- Norman Deverney
- Paul & Andrea d'Haene
- Ross Dunbar
- Ellie Dupont
- Doug Dymond,
  Regional District of Central Saanich
- Beth Eagles
- Gerhard Eichel
- Wayne Farenholtz,
  Kootrac
- Dale Fennell
- Lee Fennell
- Brig-Gen J. I. Fenton,
  Canadian Forces
- Doug Findlater
- Joanna Fletcher,
  City of Surrey
- John Flottvik
- David Fowler,
  Castanet.net

- Ronald Frank,
  for the Westcoast Vancouver Island Wildlife Advisory Committee
- Jerry Gaspar
- Denis Gaudry,
  Kamloops Fire Centre
- Paul Gevatkoff
- Richard J. Giles
- Milt & Donna Goddard
- Dave Goodman
- Trudy Goold,
  Professional Employees Association
- Joe Gordon
- City of Grand Forks
- Keith Green,
  Qualatech
- Larry Greenlaw,
  Regional District of Central Kootenay
- Steve Grimaldi,
  Ministry of Forests
- John Hamling,
  Hamling Lakes Contr.
- Patrick Hampson
- Don Harasym,
  Regional District of Central Kootenay
- Iain Hartley
- Bill Harvie,
  Nass Forest Products
- John Henrickson,
  Heli-Tec Fire Systems
- Dave Heyes,
  Canadian Air-Crane Ltd.
- C.W. Holford
- Betty Holtskog
- Lawrence Hooper
- Carolyn Hoyle,
  British Columbia Fishing Resorts
- Colin Hunt
- Lawrence Jackson
- Bob Jamieson
- Frances Johnson
- Walter Johnston
- J. T. Jones
- Robert Jones
- John Keery
- Gordon Kineshanko
- Sarah Kipp
- Sera Kirk
- Marg Kitson, with John Shaske
- Michele Lacey
- Pete Laing
- Paul Lawson
- Darren Lee

- Trevor Lind
- Colleen Linttell
- Mac Lockhart,
  Fire Chief, City of Penticton
- Lilian Lohre
- Hans Louwe,
  Atco Lumber Ltd.
- Ryan Lowe
- Boyd Lundquist
- Dr. James Lunney,
  MP, Nanaimo-Alberni
- David Lusted,
  Lusted Logging Ltd.
- Alison & Ernst Maas
- Erwin MacDermid,
  Ministry of Forests
- Gerry MacDougall
- A. MacGregor
- Robert MacKay,
  C-Com Sattelite
- Virginia Mack-Laurie
- Dean Mackley
- Stu Malcolmson,
  Madburn Ent.
- Linda & Gord Marshall
- Sheldon Martell
- Don Mazur
- Rob McAinsh
- Dave McGill
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- Alan Pineo
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APPENDIX C

Answers to Some Commonly Asked Questions

Where it was reasonable and practical to do so, we endeavoured to find answers to those questions, posed at our public hearings, which we were not able to address at the time. These questions were forwarded to the various responsible departments and agencies of government for follow-up. The questions and their answers are stated below.

Q. What is the distance from a structure that a Fire Department considers to be its jurisdictional boundary?

A. The fire protection boundaries of a fire department are usually the same as the municipal boundaries, unless otherwise stated. In some cases, a municipality will contract their fire suppression services to areas outside their municipal boundaries. Fire department protection boundaries are defined by property lines, not by structures. – **Office of the Fire Commissioner (OFC)**

Q. Is a Fire Department not under obligation to assist civilian personnel acting in a crisis situation, at least until another high authority arrives?

A. The Community Charter, formerly the Local Government Act, gives a municipal council discretionary authority, through bylaw, to provide certain services, to determine the type and level of those services, and to define the geographical boundaries for the provision of those services. Fire department is one such service. For example, council may only require the fire department to perform fire suppression and not become involved in hazardous material response, water rescue, MVA extrication, etc., or they may want the fire department to provide a range of services. But, those services and the level of services expected must be defined in the bylaw or by council resolution.

The OFC had attempted to address this issue of fire department organization bylaws with limited success by publishing and distributing to all fire departments, the manual "Establishing and Operating a Fire Department", which also included sample pro-forma bylaws.

Many fire departments have evolved from strictly a fire suppression organization to also deliver other emergency response services, but their bylaws may not have kept pace with the increased responsibilities. This variance exposes the fire department and municipality to possible legal action against them if they cause harm, regardless of the good intention, while performing this "unauthorized" service. The liability protection granted in the Good Samaritan Act does not apply in these situations. The opposite may also occur where the fire department has been charged with a certain responsibility, through bylaw, but does not perform it to the standard defined in the bylaw.

To know specifically what services and/or obligations a Fire Department is authorized by council to provide, you must research the municipal bylaw that creates that fire department. – **Office of the Fire Commissioner**

Q. How are the hours of work for heavy equipment operators and ground crews determined?

A. Often one of the main concerns voiced by the public relates to the start and stop times of the

ground attack, for both equipment and crews and in some cases, there are concerns that crews are not working around the clock.

Fire behaviour during this fire season was ferocious, and made safety of personnel a major concern. The start and stop times of crews was generally made to allow the best suppression action according to the fire suppression plan and the fire's behaviour. On almost all the major interface fires, where the terrain, access and fire conditions allowed it, crews worked around the clock.

The decisions about when to implement night shifts and 24 hour operations were not due to financial or other restrictive factors but were made on the basis of fire suppression tactics and for safety reasons. In some cases, it would have been irresponsible and dangerous to put manpower and equipment on the fire line at night.

With over three million person hours spent on the fire line this past summer, it is significant that were few accidents and no fatalities. The decisions to attack, to retreat, and to use the air or the ground forces, can only be made by those on the scene, balancing the overwhelming desire to extinguish the fire with the obligation to reasonably protect the lives of those fighting the fire. – **Ministry of Forests**

Q. **What determines the use of specific aircraft?**

A. It is accepted fire fighting theory that aircraft do not put out fires. In these hot dry conditions, with a well-entrenched fire, aircraft have limits to their effectiveness. This is well known to the Fire Management Teams and was a factor considered in planning their strategy.

In addition, the prioritization of aircraft for initial fire attack versus fire support action is also a well-understood and complex challenge. In BC, we have the benefit of access to a wide range of aircraft, each of which has merits and drawbacks. We rely on the experience, training and judgment of the experts who have the complete picture before them when choosing the appropriate aircraft depending on the situation.

The negative comments received, regarding the lack of use of the Mars or the CL415s, are largely based upon the general public's limited understanding of the nature of forest fires and the role of these large aircraft. To the public, these aircraft are impressively large and therefore must be able to put out the fire with a single load. While this perception is understandable, it is incorrect. Although the Martin Mars is a very large aircraft, even at the early stage of these fires, the magnitude and intensity make it impossible to stop these fires with air power alone. – **Ministry of Forests**

Q. **Were there limitations on the hours of operation of pilots?**

A. To the public, huge helicopters such as the SkyCrane (S-64) and the S-61, which were used extensively during 2003, ought to be able to fly continuously. In fact, the machines require maintenance and the pilots become fatigued. The pilots are highly skilled to be able to do precision drops onto a blazing forest fire, in very extreme conditions. After six or eight hours of this, fatigue becomes a major factor for both safety and tactical reasons.

The availability of experienced pilots is finite. All areas of the interior were extremely busy with

fires and additional qualified pilots were simply not available, despite our prioritization system. In a world of unlimited supply of these highly qualified individuals, we could have double-shifted them. In the world of reality, we used the available pilots to the maximum of their operational abilities. - **Ministry of Forests**

Q. **Why were experienced loggers turned away because they lacked the certificate?**

A. When fire is threatening one's community, able-bodied people want nothing more than to help. After having volunteered to help, to stand by and wait can only be frustrating. This is compounded when an experienced logger feels they are being rejected for some simple, bureaucratic reason such as he "does not have a course".

Contrast this with the volatile fire behaviour that was predicted and experienced almost every day on these fires. Not only were we unable to send more trained ground crews into these situations, because of the lack of escape routes or access to the fire itself, we certainly could not use untrained people in these situations. Fire fighting is extremely dangerous at any time, let alone in this fire season. A BC coroner's report on this issue, which followed the death of a logger in Sechelt who was overtaken by fire, spoke very specifically on this situation and found that in that case his death was due to his lack of knowledge of fire behaviour and that he was physically unfit for the rigors of fire fighting.

Having said that, local loggers were used extensively when it was safe to do so. At one point, there were 1200 pieces of equipment with operators on the fire line. They were made up of a large proportion of local loggers. Loggers were also used as fallers, line locators and in some cases, as actual fire fighters.

Untrained fire fighters simply cannot be used in these situations. The accident rates would skyrocket and the resulting inquiries would certainly find that we had not followed the recommendations of the previous coroner's report or complied with the Workers Compensation Board Industrial Safety regulations. - **Ministry of Forests**

Q. **What about the use of Heavy Equipment?**

A. A system is in place for cataloguing of heavy equipment and operators, throughout the province. This system worked well this fire season. In our review of equipment availability, we found that the equipment supply was adequate for our daily needs. After the August 16th escalation in fire activity, more equipment was needed and quickly, and that need was met through the addition of 300 pieces of heavy equipment to the 778 pieces already deployed. - **Ministry of Forests**

Q. **What determines the width and location of Fireguards?**

A. Fire guards are a critical part of suppression strategies and the tactics surrounding their use depends entirely on the specific situation. The ideal width of fireguards also depends very much on the situation. Location and width of fireguards will depend on the terrain, fuel, weather, proximity to the fire and the intended use regarding back burning.

The size of guards is not fixed to a standard size, but rather the size depends on many factors, which ultimately must be decided upon by the people determining the strategy. - **Ministry of Forests**

Q. **Did the Ministry of Water, Land and Air Protection have an impact on how the fire was handled in the Okanagan Mountain Park and in Kelowna?**

A. In Okanagan Mountain Park and Myra Bellevue Protected Area, Drew Carmichael (Regional Manager) as well as 2 area supervisors were involved on a daily basis (sometimes multiple times in one day) with Ministry of Forests Protection staff either at incident command meetings or in helicopters when the fire was within the park boundaries. As for having an "impact" on how the 'fire was handled', this is a non-question, as humans really had no impact on this fire. It did what it wanted despite fire control efforts. Drew did have influence over where guards were recommended. However, very few guards were ever constructed in Okanagan Mountain due to inaccessibility, the extreme rate of spread and an inability to get machinery working on a potential guard prior to fire advancement. Potential guard placement in MB was referred to WLAP (Drew). No impact in Kelowna.

The BC Parks Pre-Attack plan and Fire Management Plan stipulated that all fires in Okanagan Mountain were to be aggressively attacked for full suppression and MOF Fire Protection Branch did aggressively attack the fire. BC Parks fully cooperated with MOF on all fire control efforts in the park and all suppression tactics recommended by the Ministry of Forests were approved by BC Parks. - **Ministry of Water, Land and Air Protection**

Q. **Will the Ministry of Water, Land and Air Protection consider controlling potential grass fires in the future by such methods as allowing cattle to graze in provincial parks?**

A. As a result of pre-existing grazing rights that were established prior to park designation and which were recognized by park designation, BC Parks does have permits for grazing in some parks. Cattle grazing, however, will not be considered in parks where it there are no longer active grazing tenures since grazing may significantly impact sensitive protected area natural values by: introducing weed species; initiating soil disturbances; eliminating rare vegetation communities; and, impacting riparian areas and water quality. - **Ministry of Water, Land and Air Protection**

Q. **Does BC Parks have rules preventing use of bulldozers in the Park?**

A. BC Parks works with the Ministry of Forests to achieve a, "light hand on the land" wildfire suppression ethic. Accordingly, all efforts are made to minimize the impact of fire suppression activities on the park landscape. Park Pre-Attack plans and Fire Management Plans identify park zoning for appropriate fire management activities from limited attack to full suppression and associated suppression tools and tactics. The utilization of large scale fire guards constructed with bulldozers is considered appropriate to protect health and safety, adjacent communities or park values in extreme fire circumstances and was utilized on

several fires in parks this summer - Nunsti Park (Chilko Fire), West Arm Park (Kutetl Creek Fire) and Myra Bellevue Protected Area (Okanagan Mountain Fire). In circumstances where bulldozed fire lines are utilized in parks, the fire lines must be completely rehabilitated after the fire is extinguished. - **Ministry of Water Land and Air Protection**

Q. **Are there funds available to advertise that BC is still basically green and open for business?**

A. To offset some of the immediate impacts of the fires, Tourism British Columbia developed a provincial marketing strategy for the Fall 2003 to counteract the negative publicity that has been generated by the fire events. This positive action plan was designed to preserve business in unaffected areas, mitigate losses in impacted areas, as well as build momentum across the province and increase visitation.

The total funding for this plan was $450,000 - with one third of the funding coming from the then Ministry of Competition, Science and Enterprise, one third from Tourism British Columbia, and one third from the private sector.

This partnering effort has reassured potential and expected visitors that British Columbia is a safe place to travel, and that the province is "open for business". – **Ministry of Small Business and Economic Development**

Q. **At what point is an EOC activated? Are there activation levels or thresholds?**

A. Activation of an Emergency Operations Centre (EOC) is a local authority decision. Municipalities and Regional Districts that are "local authorities" under the Emergency Program Act must have an emergency plan and a hazard, risk and vulnerability analysis for their jurisdiction, which would likely predetermine the rationale for when and why their EOC is activated.

The province (ie PEP Regional Managers), on an incident-by-incident basis may suggest to a local authority to activate its EOC.

Similar to Provincial Regional Emergency Operations Centres (PREOCs) activation levels there are three activation levels for EOCs. - **Ministry of Public Safety and Solicitor General**

Q. **Who is in charge under Canadian and Provincial law when an evacuation is ordered?**

A. It depends on whose authority and what legislation the evacuation is ordered under. The Office of the Fire Commissioner under the Fire Services Act was generally responsible for evacuations (other than BCFS Protection tactical evacuations) during the 2003 fire season. A number of pieces of legislation can be used including the Emergency Program Act. - **Ministry of Public Safety and Solicitor General**

Q. Did the provincial team address the potential need to evacuate or rescue train crews from remote areas when there was zero visibility?

A. Rail transportation officials are part of the integrated coordination, if required, at regional and central level. They were actively involved as part of the team in fire season 2003.

This question is again aimed at site level. Generally it would be, under BCERMS and ICS principles, part of advanced planning, and evacuation branches at site level a role to plan for such variables. Specific dates and locations are required.

Ultimately it is primarily an Incident Commander decision and consideration. Regional response centres provide support to assist in these decisions if required. - **Ministry of Public Safety and Solicitor General**

Q. Can the EOC Logistics Section and ESS logistics run together? They both require the same skill set.

A. While the respective logistics sections require similar skill sets, a thorough understanding of ESS should be possessed by the personnel in the EOC logistics section. The level of ESS knowledge, training and experience should be significant to best accomplish the objectives and tasks effectively. An example of this would be the Personnel Branch under EOC Logistics Section with the Worker Care and Volunteer/Staff Management Units. The determination would be made based on the scale of the incident and the number of available resources. - **Ministry of Public Safety and Solicitor General**

Q. Does unified command allow for joint agency actions?

A. That is what unified command is. Unified command is defined as: "a unified team effort which allows for all agencies with jurisdictional responsibility for the incident, either geographic or functional, to manage an incident by establishing a common set of incident objectives, strategies and action plans. This is accomplished without losing or abdicating agency authority, responsibility, or accountability. The term "incident command," when used throughout this standard (Incident Command System I-100 – Orientation), shall be deemed to include Unified Command." - **Ministry of Public Safety and Solicitor General**

APPENDIX D

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APPENDIX E

Glossary

AAC: Annual Allowable Cut

BCERMS: British Columbia Emergency Response Management System

CBC: Canadian Broadcasting Corporation

Defensible Space: The utilization of fuel and vegetation management techniques to reduce fire exposure to vulnerable structure and infrastructure

DFAA: Disaster Financial Assistance Arrangements (Federal)

Ecosystem: Community of organisms and its environment

EOC: Emergency Operations Centre

ESS: Emergency Social Services

IC: Incident Commander

ICS: Incident Command System

IEPC: Inter-agency Emergency Preparedness Council

Interface Fire: A fire that involves human development and wild land simultaneously

Interface Region/Zone: A region/zone where there is potential for a fire that involves human development and wild land simultaneously

JIBC: Justice Institute of British Columbia

Local Government: Governing bodies of cities, districts, regional districts, municipalities, towns and villages

LRMP: Land and Resource Management Plan

Mitigation: To minimize, reduce, or moderate a certain force such as potential for wildfires

MOF: Ministry of Forests

MROC: Ministry Regional Operations Centre

NFPA: National Fire Protection Association

NGO: Non-Governmental Organization

PEP: Provincial Emergency Program

PREOC: Provincial Regional Emergency Operations Centre

PWC: PricewaterhouseCoopers

OFC: Office of the Fire Commissioner

RCMP: Royal Canadian Mounted Police

SEMS: Standardized Emergency Management System

Structural Fire: A fire in a building or structure

Structural Integrity: The ability of a structure to withstand intrusion by fire

TEAMS: Temporary Emergency Assignment Management System

TNRD: Thompson Nicola Regional District

Urban Interface: Same as Interface Region/Zone

Wildfire: A rapidly spreading fire involving vegetation such as trees, bushes and grasses

Wildland Urban Interface: Same as Interface Region/Zone